

Academic Stress and Academic Self-Efficacy as Predictors of Psychological Health in  
College Students

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of the requirements for the degree  
Doctor of Philosophy

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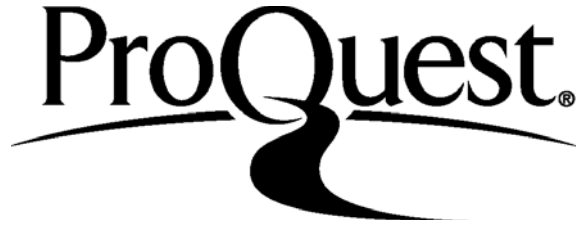
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College Students

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### Abstract

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Academic Stress and Academic Self-Efficacy as Predictors of Psychological Health in College Students

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Previous research has indicated that psychological health, academic self-efficacy, and academic stress are significant factors in the personal and academic lives of many college students. Each of these issues has been found to influence academic performance, adjustment to college, and many other aspects of students' lives. The impact that academic self-efficacy and academic stress have on psychological health has not been examined in detail however.

In this study, the researcher examined gender, academic self-efficacy, and academic stress as predictors of psychological health in college students. An online survey comprised of instruments assessing these variables was distributed to a sample of college students at one Midwestern university in the USA. The final sample size consisted of 146 participants. A hierarchical regression analysis was conducted to analyze the results, where gender was the first variable entered into the regression analysis, academic self-efficacy second, and academic stress was entered last as it was predicted to account for the most variation in psychological health scores.

The results of the analysis indicated that gender was not a significant predictor of psychological health in this sample. Academic self-efficacy and academic stress were both significant predictors of psychological health. Academic self-efficacy accounted for

12.6% of the variation in psychological health scores and academic stress accounted for an additional 11.7% of the variation in psychological health scores. Academic stress did not account for more variation than academic self-efficacy as was hypothesized.

Academic stress was found to have a negative correlation with psychological health as expected, but academic self-efficacy also had a negative correlation with psychological health unexpectedly. These results are discussed and possible implications for counselors and others who work with college students are outlined. The limitations of the study and possible directions for future research on these topics are also detailed.

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## Chapter 1: Introduction

### Background of the Study

The period of late adolescence and young adulthood is shaped by a number of developmental changes. Many individuals experience milestones such as living away from their parents for the first time, establishing romantic relationships and friendships, and beginning the process of contemplating a career. The Carnegie Council on Adolescent Development (1995) defined late adolescence as the period from age 18 into the 20s for individuals who may delay true entry into the adult stage because they are pursuing higher education or other goals. Arnett (2001) defined this stage of development as “emerging adulthood.” Prominent developmental theorists detail a number of life tasks that are commonly salient in late adolescence and early adulthood.

Erik Erikson (1963) described developmental stages throughout the lifespan, during which individuals work on resolving specific personal conflicts. Erikson (1963) suggested that adolescence is a period that is characterized by the challenges associated with the various roles that an individual has to play as an emerging identity is evolving. This period is marked by the individual striving to define their own identity and separate themselves from their parents or other authority figures in their lives. Rebellion against these authority figures during this stage of development is common (Erikson, 1963). Individuals who successfully navigate the challenges of this stage will emerge from adolescence confident in their personal identity while those who do not may experience confusion about the roles that they serve within their peer groups, families, or society as a whole.

Marcia (1966) expanded the adolescent developmental theory and posited four possible outcomes or statuses that adolescents experience as they make decisions on the path to establishing their identity. They are: (a) diffusion; (b) foreclosure; (c) moratorium; and (d) identity achievement (Kroger, Martinussen, & Marcia, 2010; Marcia, 1966). Similar to the possible outcomes of Erikson's identity vs. role confusion task, Marcia (1966) presented the outcomes of identity diffusion or identity achievement. An adolescent with an identity diffusion status lacks commitment to a particular identity and may or may not have experienced an identity crisis (Marcia, 1966). An individual who has not undergone extensive identity exploration or experienced an identity crisis but is committed to an identity (usually one that is prescribed by a parent or other authority figure) displays the foreclosure status (Marcia, 1966). The moratorium status is marked by an active struggle through an identity crisis to make identity commitments, but those commitments remain vague (Marcia, 1966). According to Marcia (1966), an individual who displays the status of identity achievement has explored different possible identity choices, has potentially gone through an identity crisis, and arrived at a decision to commit to a particular identity on their own. These processes of working to establish (or not establish) one's ideological, vocational and sexual identities are important developmental undertakings involved in the period of adolescence.

A similar model of adolescent identity formation was developed by Luyckx, Goossens, Soenens and Beyers (2006). This model includes four dimensions: Commitment Making, Identification with Commitment, Exploration in Depth, and Exploration in Breadth (Luyckx et al., 2006). Within the framework of this model, an

adolescent examines various identity options in the Exploration in Breadth dimension. After assessing the information gathered, they make choices to commit to an identity of some sort, but might not feel fully sure about that identity, in the Commitment Making dimension. The Exploration in Depth dimension entails assessing the choices that they have made. Once the individual begins to fully accept and express aspects of that identity, they would occupy the Identification with Commitment dimension (Luyckx et al., 2006).

An additional pair of polarities proposed by Erikson (1963) that is applicable to this general age group is that of intimacy vs. isolation. Erikson (1963) asserted that individuals work through this conflict from ages 20 to 40, and the Carnegie Council on Adolescent Development (1995) and Arnett (2001) both included the 20s as part of late adolescence or emerging adulthood. During this period each individual strives to establish and maintain meaningful relationships with others in their lives in order to avoid feeling isolated. These relationships may be romantic partnerships, friendships, or professional relationships. Individuals who successfully resolve this period of development emerge with meaningful relationships that satisfy their needs for personal connections. Unsuccessful resolutions are likely experienced by individuals who do not have enough meaningful relationships in their lives to meet their needs or the relationships they have are largely superficial.

Expanding upon the work of theorists like Erikson (1963), a developmental stage between late adolescence and early adulthood was proposed by Keniston (1971). Keniston (1971) described this stage, termed “youth,” as one involving maturation

beyond adolescence but an extension or delay of time before taking on the responsibilities and maturities of adulthood. Keniston (1971) proposed the youth stage upon observing that many young people were engaging in self-reflection and social activism while attending college or pursuing other endeavors after adolescent milestones such as graduating from high school, but prior to typical adulthood events such as starting a permanent career, getting married or having children. Youth is marked by the issue of “tension between self and society” (Keniston, 1971, p. 8), a conflict that is characterized by the questioning of social norms, dissent of popular ideals and sometimes revolt against societal conventions. Through this examination, individuals in the youth stage develop their own beliefs and identity and may influence social change as well in some cases. Keniston (1971) explained that youth is not necessarily experienced during a specific age range, but that it is rather an optional stage that some individuals go through and others do not. Though not all college students are in the youth stage of development, Keniston (1971) believed that the college environment does often offer the opportunity for the analysis and questioning of social conventions in comparison to one’s own developing principles that is involved in youth.

Robert Havighurst (1972) defined several other developmental milestones that many people in late adolescence and early adulthood may work toward. Havighurst (1972) defined the period of adolescence as ages 12 to 18, but many of the developmental tasks he describes for this age group may be applicable for individuals of a slightly older age in today’s society. These applicable tasks include achieving more mature relationships with peers, working toward emotional independence from ones parents and



other significant adults, and preparing to start a career (Havighurst, 1972). Havighurst (1972) discussed additional important tasks for individuals in this age group such as developing a personal set of values and ethical principles to follow and beginning to strive to act in ways that are socially responsible. The developmental tasks of considering and entering into marriage and the formation of a family may also apply to some individuals in this age range.

Many individuals in the late adolescence or early adulthood age group attend college, and going to college involves many new events and challenges for most students. Chickering and Reisser (1993) described numerous developmental tasks undertaken by college students in the form of seven “vectors.” Chickering and Reisser (1993) named the vectors “developing competence” (p. 45), “managing emotions” (p. 46), “moving through autonomy toward interdependence” (p. 47), “developing mature interpersonal relationships” (p. 48), “establishing identity” (p. 48), “developing purpose” (p. 50), and “developing integrity” (p. 51). The scope of these vectors illustrates the diverse developmental tasks that students are faced with during their college careers. As students work to develop new skills and knowledge academically, they are likely also working to develop in a number of ways both intra-personally and inter-personally. If students face difficulty with some of these developmental tasks, they may experience psychological health concerns or academic challenges.

**Psychological health of college students.** Current reports indicate that large numbers of college students experience concerns related to psychological health (American College Health Association National College Health Assessment

Undergraduate Students Reference Group Data Report Spring 2015, 2015). The spring 2015 American College Health Association National College Health Assessment final data set included survey data from 74,438 undergraduate students at 108 postsecondary institutions on topics related to overall health, substance use, and psychological health. Relative to mental health, 62.9% of female students and 46.1% of male students reported that they had felt overwhelming anxiety within the last twelve months (American College Health Association National College Health Assessment Undergraduate Students Reference Group Executive Summary Spring 2015, 2015, p. 14). When asked how frequently they had felt so depressed that it was difficult to function, 37.3% of female students and 30.3% of male students reported that they had felt this way in the past 12 months (American College Health Association National College Health Assessment Undergraduate Students Reference Group Executive Summary Spring 2015, 2015, p. 14). On the topic of suicide, 9.9% of female students and 9.1% of male students reported seriously considering suicide in the past 12 months, while 1.5% of female students and 1.5% of male students reported attempting suicide in that time frame (American College Health Association National College Health Assessment Undergraduate Students Reference Group Executive Summary Spring 2015, 2015, p. 14). These results suggest that many college students are grappling with psychological health concerns.

Despite the apparent prevalence of psychological health concerns in college students, the percentage of students who actually seek counseling from their university counseling centers is relatively low. The 2014 National Survey of College Counseling Centers conducted by Robert Gallagher surveyed the directors of 275 college and

university counseling centers across the nation, representing 3.3 million students eligible for counseling services (Gallagher, 2014, p. 4). Within that sample of students, 11% sought individual or group counseling services during the year the survey encompassed (Gallagher, 2014, p. 4). The data indicates that many students who are experiencing serious psychological health concerns may not be seeking counseling, at least from their campus counseling centers.

Gender differences in psychological health concerns and other areas of concern for college students may additionally be an important area for consideration in this population. The American College Health Association National College Health Assessment (2015) showed differences in the frequency at which male and female students reported experiencing most of the psychological health concerns the survey assessed. Misra and McKean (2000) found higher anxiety scores related to academic issues and lower leisure satisfaction scores in female participants than in male participants. Dyson and Renk (2006) additionally found differences between male and female participants in coping strategies and depressive symptoms.

A number of concerns prevalent in the college environment may play a role in the overall psychological health of students. Common concerns for college students may include relationship issues, homesickness, substance use and abuse, questions related to future careers, and academic difficulties. Academic struggles with the college level workload and content may also be a part of college life for some students.

**Academic challenges in college.** In addition to the developmental and social challenges that occur during college, many students find challenges with their academic

work. Academic struggles appear to have a significant impact on the students who experience them. The spring 2015 American College Health Association National College Health Assessment reveals 50% of female students surveyed and 41% of male students reported that academics have been traumatic or very difficult to handle in the past 12 months (American College Health Association National College Health Assessment Undergraduate Students Reference Group Data Report Spring 2015, 2015, p. 37). It can be extrapolated that the difficulty in handling academic issues could have an impact on the psychological health of these students.

**Psychological health in college students who struggle academically.** A number of concerns can affect both the psychological health and academic performance of college students. Ducey (2006) described a number of these causes. One category of sources for academic difficulty consists of problems with preparation for college level work and the processes involved in successfully completing this work. Ducey (2006) pointed to concerns such as undemanding assignments in a student's previous schools, socioeconomic factors, and distracting life conditions which may cause some students to enter college less prepared than their peers to adjust to the type of assignments expected in college. Increased workload, poor study skills, problems with organization, or a lack of "fit" between the student and the college environment can also lead to academic problems (Ducey, 2006). While many concerns can be overcome through a combination of counseling, study skills workshops and tutoring, other complicated concerns may contribute to academic struggles for many students.

Developmental challenges, psychological concerns and learning differences can additionally have considerable influences on a student's academic performance. Many of the previously described developmental tasks such as individuating from one's parents, establishing and maintaining more serious interpersonal relationships and exploring future career plans can interrupt or distract students from focusing on their academic work. Psychological health issues and other concerns students encounter in college can be significant contributors to academic problems (Wlazelek & Hartman, 2007). While much less common than psychological health concerns such as depression or anxiety, Ducey (2006) pointed out that major psychological illnesses such as schizophrenia often begin to manifest during the typical college age range. Differences in learning can also lead to serious academic problems. Commonly referred to as "learning disabilities," students whose style or way of learning clashes with traditional methods of classroom instruction and academic assessment may struggle with much of their academic work in college without proper diagnosis and reasonable accommodations.

Common issues such as lack of motivation, procrastination and perfectionism can also impact academic performance and, in some cases, indicate deeper psychological health concerns (Ducey, 2006). Lack of motivation where a student may struggle to find the energy and focus to perform day-to-day tasks, let alone their academic assignments, could indicate depression. Procrastination can stem from anxiety in that students may feel less confident about their ability to complete the work required of them and therefore delay the anxiety involved in doing the work until the last possible minute. Students who are perfectionistic may place unreasonable demands on themselves and the quality of

their assignments and experience a great deal of anxiety or avoid even submitting their work in their pursuit of the “perfect” product. While these and other psychological health concerns contribute to the academic problems for many students, the lack of motivation or procrastination for other students may be a product of a student simply not caring about their academic work or valuing other aspects of the college experience (such as social activities and self-exploration) over their academic pursuits (Ducey, 2006).

**Academic self-efficacy.** A student’s academic self-efficacy beliefs may play a key role in their academic performance and in turn their psychological health. Academic self-efficacy refers to a student’s perceptions about their own capabilities to perform the academic tasks required of them in college and achieve the results they desire from those tasks (Owen & Froman, 1988; Pajares, 1996). Academic self-efficacy beliefs seem to develop well before college based on the beliefs that a student’s parents have about their academic efficacy (Bandura, Barbaranelli, Caprana, & Pastorelli, 1996; Zimmerman, Bandura, & Martinez-Pons, 1992) as well as the prior academic experiences that a student has (Elias & MacDonald, 2007).

Academic self-efficacy has frequently been found to have a significant impact on academic performance in college students (Elias & Loomis, 2002; Elias & MacDonald, 2007; Gore, 2006; Lent, Brown, & Larkin, 1986; Wood & Locke, 1987). Students who do not perceive that they have the capabilities and resources to adequately complete their academic work often do not perform as well academically as their peers who do perceive that they are capable of fulfilling the requirements of their academic coursework and achieving the grades and other results they desire. In addition to academic performance,

research has indicated that academic self-efficacy may be a predictor of other important factors in college students' lives, including adjustment to the first year of college (Chemers, Hu, & Garcia, 2001), and perceived career options (Lent et al., 1986). Academic self-efficacy has been found to have a negative correlation with overall stress in college students (Zajacova, Lynch, & Espenshade, 2005). Stress related to the academic realm of college students' lives is another important factor to consider.

**Academic stress.** Academic stress is stress that is generated from academic sources, and research has indicated that it affects many college students and can be caused by many different stressors (Abouserie, 1994; Agolla & Ongori, 2009; Archer & Lamnin, 1985; Ross, Niebling & Heckert, 1999; Shirom, 1986; Zeidner, 1992). The most common and significant academic stressors have been found to include tests and examinations, grades on tests and exams, studying for exams, the perceptions of having too much work to complete or too much material to learn, a need to do well academically, essays or projects and relations with faculty among others (Abouserie, 1994; Archer & Lamnin, 1985). Academic stress may be experienced and managed differently by males and females (Jones, 1993; Abouserie, 1994; Zeidner, 1992) and by students from different cultural backgrounds (Misra & Castillo, 2004).

High levels of academic stress have been found to be associated with poor academic performance (Akgun & Ciarrochi, 2003; Struthers, Perry, & Menec, 2000). Higher levels of academic stress may additionally impact students' overall well-being and psychological health. Weidner, Kohlmann, Dotzauer and Burns (1996) found that college students exhibited significant increases in negative affect and decreases in

positive affect as well as significant decreases in positive health behaviors during times of high academic stress. Ang and Huan (2006b) found a significant relationship between academic stress and suicidal ideation, though this relationship was reduced in magnitude when depression was included in the statistical model. All of these findings indicate that high levels of academic stress can have a serious impact on the college students who experience them.

### **Statement of the Problem**

Psychological health, academic self-efficacy, and academic stress have been shown to be important considerations in the lives of many college students. Each of these factors have been shown to impact academic performance and other areas of college students' lives. However, the impact that academic self-efficacy and academic stress have on the psychological health of college students has not been thoroughly explored. Understanding whether academic self-efficacy and academic stress are predictors of the psychological health of college students may help college counselors and many other professionals working with college students to better understand college students and their needs. Useful intervention strategies to assist college students who experience low academic self-efficacy or high levels of academic stress are also largely absent from the existing literature. Understanding the role that these variables may play in predicting psychological health could assist counselors and other college professionals in creating the best interventions for the students with whom they work.



### **Significance of the Study**

This study will explore the role that academic self-efficacy and academic stress may play in predicting the psychological health of college students. It will additionally contribute to the existing literature on mental health, academic self-efficacy and academic stress in the college student population. Though academic self-efficacy and academic stress are important concerns for many college students, the research on the influence of academic self-efficacy and academic stress on psychological health is limited. These findings will be useful for counselors and other college and university personnel who work with students who struggle academically and students who experience a great deal of academic stress in order to better understand the psychological health concerns that these students face.

### **Research Questions**

1. Does gender account for a significant amount of the variation in the psychological health of college students as measured by the Mental Health Inventory (MHI)?
2. Does academic self-efficacy as measured by the College Academic Self-Efficacy Scale (CASES) account for a significant amount of variation in the psychological health of college students as measured by the Mental Health Inventory (MHI) after controlling for gender?
3. Does academic stress as measured by the Academic Stress Scale account for a significant amount of the variation in the psychological health of college students as measured by the Mental Health Inventory (MHI) after controlling for gender and academic self-efficacy?

## Research Hypotheses

In order to further explore the research questions addressed above, the following research hypotheses will be investigated.

1. Gender will contribute to accounting for the variation in the psychological health of college students as measured by the Mental Health Inventory (MHI).
2. Academic self-efficacy as measured by the College Academic Self-Efficacy Scale (CASES) will contribute to accounting for the variation in the psychological health of college students above and beyond that accounted for by gender.
3. Academic stress as measured by the Academic Stress Scale will contribute to accounting for the variation in the psychological health of college students above and beyond that accounted for by gender and self-efficacy.

The ordering for the variable entry in this study was based on the existing literature related to these variables. Previous research has found gender differences related to psychological health (American College Health Association National College Health Assessment Undergraduate Students Reference Group Executive Summary Spring 2015, 2015; Dyson & Renk, 2006; Misra & McKean, 2000), but gender was not expected to account for as much variation in psychological health as academic self-efficacy and academic stress. The relationship between academic self-efficacy and psychological health has not been examined in previous literature, but numerous studies have found academic self-efficacy beliefs to be significantly related to academic performance in college students (Elias & Loomis, 2002; Elias & MacDonald, 2007; Gore, 2006; Honicke & Broadbent, 2016; Lent et al., 1986; Mattern & Shaw, 2010; Putwain, Sander, & Larkin,

2013; Wood & Locke, 1987) as well as to adjustment in first year college students (Chemers et al., 2001). Based on these other important areas of impact that academic self-efficacy had for college students in previous studies, it was hypothesized that academic self-efficacy would account for more variation in psychological health than gender, but less than academic stress. Academic stress has been found to have a negative association with academic performance (Akgun & Ciarrochi, 2003; Struthers et al., 2000) and with positive affect and positive health behaviors (Weidner et al., 1996). Academic stress has also been found to have a relationship with serious psychological concerns such as suicidal ideation in previous research (Ang & Huan, 2006b), which led to the hypothesis that it would account for the largest amount of variation in psychological health.

### **Limitations and Delimitations of the Study**

**Limitations.** The generalizability of this study is limited by the use of a sample of undergraduate students from a single university in the Midwestern part of the United States. The experiences of students at this university may not be generalizable to the experiences of students in other regions and institutional settings. The experiences of undergraduate students at this university might be different from those of undergraduate students at other universities. The participants will be drawn from various disciplines and the academic stress may vary from discipline to discipline. Due to the nature of survey research it is also possible that the students who choose to respond to the survey will not be representative of the population of students at the university. The study is also based on the self-reported experiences of the students sampled, and the students may not report

their experiences accurately or may do so in a socially desirable direction. Since the sample is restricted to the undergraduate traditional aged student the results or experiences of students who struggle academically or experience academic stress in different types of educational programs, such as non-degree seeking students or students in graduate level programs, may differ from those of the students sampled in this study.

**Delimitations.** The sample will be drawn from undergraduate students from the main campus of a single Midwestern university. This university also has five regional campuses, but the sample will be drawn from the main campus because the study is focused on traditional age college students and many non-traditional students attend the regional campuses. Non-traditional students may experience levels of academic self-efficacy or academic stress different from traditional students. Additionally, this study will only examine the variables academic self-efficacy and academic stress and other variables could influence the psychological health of college students. This study focuses on psychological health and how the other factors examined impact it, and not vice versa.

### **Definitions of Terms**

**Psychological health.** The World Health Organization (WHO) provides a basic definition for the concept of psychological or mental health. In a WHO (2010) Fact Sheet on the topic of mental health, it is stated,

Mental health is described as more than the absence of mental disorders or disabilities. Mental health is a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community. In this

positive sense, mental health is the foundation for individual well-being and the effective functioning of a community. (para. 2 & 3)

A number of factors influence an individual's mental health, including biological, psychological, social and environmental factors (WHO, 2010).

**Gender.** A WHO (2015) Fact Sheet on the topic of gender defines the term as “the socially constructed characteristics of women and men – such as the norms, roles and relationships that exist between them” (para. 1). For the purpose of this study, gender will be used to refer to the identity (male, female, or other) self-selected by participants.

**Academic self-efficacy.** For the purpose of this study, the term academic self-efficacy will be used to refer to an individual's belief or confidence about their ability to perform a particular task or behavior related to their academic work in the college setting (Owen & Froman, 1988, p. 4).

**Academic stress.** In this investigation, the term academic stress will be used to refer to stress that is experienced by members of the college population in response to academic tasks or events (Kohn & Frazer, 1986, p. 416).

**Counseling interventions.** In this study, counseling interventions refer to strategies and techniques utilized by college counselors to assist students experiencing academic concerns, such as a lack of academic self-efficacy or problematic academic stress. These strategies include individual counseling sessions (Kriner & Shriberg, 1992; Schwitzer, Grogan, Kaddoura, & Ochoa, 1993; Wlazelek & Coulter, 1999), partnerships

between counseling centers and faculty (Coll & Stewart, 2002) or academic departments (Kadar, 2001), and workshops led by counseling center staff members (Nance, 2007).

**Non-counseling interventions.** The term non-counseling interventions will be used to refer to strategies and techniques utilized by college staff members in support roles other than counseling to assist students experiencing academic concerns. These strategies include structured group programs (Coleman & Freedman, 1996), a general study skills course (Wernersbach, Crowley, Bates, & Rosenthal, 2014), and programming involving multiple university divisions to address a wide span of student needs (“Residence Life,” 2005).

### Summary

An overview of background information relevant to the study was presented in chapter one. The problem statement, significance and research hypotheses of this study were introduced. Potential limitations and delimitations for this study were also discussed. Basic definitions for key terms were additionally defined. An exploration of existing literature on the topics of college student psychological health, academic self-efficacy, and academic stress are included in chapter two. Chapter three consists of a description of the methodology carried out in this study, and chapter four is comprised of a summary of the results of the study. Chapter five contains a discussion of these findings as well as implications for professionals working with college students and suggestions for future research in this area.

## Chapter 2: Review of Literature

The existing literature on the topics explored in this study provides a number of interesting perspectives. Psychological health in college students and findings related to the academic self-efficacy beliefs and academic stress of college students are frequently covered, but these variables are not often examined together. This chapter will include a review and critical analysis of relevant literature on college student psychological health, academic self-efficacy and academic stress in the college context, focusing on psychosocial theory.

### College Student Development

Many of the classic human development theories (Erikson, 1963; Marcia, 1966; Havighurst, 1972) placed developmental tasks earlier in life than they might occur now, due to the fact that adulthood may be seen as suspended or delayed by going to college. College is a significant life event that introduces a number of developmental changes and critical events. Moving away from parents and childhood homes for the first time and encountering a number of new social and academic situations are just a few of these transitions. Highlighting the unique developmental tasks that take place for many students during college, Chickering and Reisser (1993) described seven “vectors” of college student development, which is a revision of a model originally proposed by Chickering (1969). The first of these vectors involves “developing competence” (Chickering & Reisser, 1993, p. 45). According to Chickering and Reisser (1993), students develop competence in three difference areas during college: (a) intellectual competence; (b) physical and manual skills; and (c) interpersonal competence. In the

area of intellectual competence, class sessions, assignments, discussions and other tasks help students to build their knowledge of content in their chosen field and others that they take courses in, as well as aid in the development of overall analytical skills (Chickering & Reisser, 1993). Hands-on course work and various extracurricular activities in college may facilitate the development of competence in physical and manual skills for many students. Relating to peers in a variety of contexts and settings helps students to develop interpersonal competence in the form of effective communication skills, relating and responding to others, and building and maintaining healthy one-on-one relationships and group dynamics (Chickering & Reisser, 1993). The second vector of development involves “managing emotions” (Chickering & Reisser, 1993, p. 46). Going to college and the often new experiences that are involved in the college years may evoke strong emotional reactions, and in order to proceed through this developmental vector, students must learn to manage strong emotions effectively and express them in healthy ways. The third vector consists of “moving through autonomy toward interdependence” (Chickering & Reisser, 1993, p. 47). In this vector, Chickering and Reisser (1993) explained that students must first establish independence and be able to manage important tasks on their own, before moving toward valuing interdependence and striving to maintain a healthy give and take in relationships. This process leads into the fourth developmental vector of “developing mature interpersonal relationships” (Chickering & Reisser, 1993, p. 48), during which the student learns to appreciate the differences between themselves and others and develop a capacity for intimacy. The fifth vector involves “establishing identity” (Chickering & Reisser, 1993, p. 48), a process during which students work to



become comfortable with their appearance, gender and sexual orientation, clarify their roles and accept their inherent qualities to establish a stable identity. All of the vectors within the model ultimately revolve around developing and demonstrating one's identity. The sixth vector entails "developing purpose" in terms of vocational plans, commitments to family and relationships, and personal interests (Chickering & Reisser, 1993, p. 50). The seventh vector involves "developing integrity" (Chickering & Reisser, 1993, p. 51) by determining one's personal values and acting in congruence with these values. Due to these significant changes and events during the college years, psychological health becomes an important topic when considering the college student population.

### **College Student Psychological Health**

Numerous studies have found that psychological health is a significant consideration in the lives of college students (American College Health Association National College Health Assessment Undergraduate Students Reference Group Data Report Spring 2015, 2015; Ducey, 2006; Eisenberg, Gollust, Golberstein, & Hefner, 2007; Zivin, Eisenberg, Gollust, & Golberstein, 2009). A variety of factors contribute to the psychological distress and wellness of college students, and a wide array of psychological health concerns can be seen in this population.

**Prevalence of psychological health concerns in college students.** Studies examining prevalence of psychological health concerns in the college student population have shown significant findings. In a study exploring the persistence of psychological health problems and needs in a college student population, Zivin et al. (2009) surveyed 2,843 undergraduate and graduate students at a large public university using screening

instruments to assess for anxiety, depression and eating disorders and then sent a follow-up survey identical to the initial survey two years later. 763 of these students completed the follow-up survey and were therefore included in the researchers' results. They found that both at their first survey and the follow-up, over one third of students in their sample had one of the psychological health concerns for which they screened. The researchers also found that 60% of the students who had a psychological health concern at the time of their first survey still had one two years later at the follow up, though some disorders were more persistent than others (Zivin, et al., 2009). Very high percentages of students with psychological health concerns at the first survey and at the second survey reported no perceived need for psychological health treatment services or for actual use of these services, indicating that many students with psychological health concerns did not believe they needed treatment or possibly were not seeking treatment even if they did believe they needed it.

Eisenberg et al. (2007) surveyed samples of undergraduate and graduate students at a large public university and examined the areas of depression, anxiety and suicidality. Of the 1,181 undergraduate students surveyed, 13.8% screened positive for some type of depression on the PHQ-9 instrument that was used, while 4.2% showed some type of anxiety on the PHQ. Overall 15.6% showed some degree of depression or anxiety. Additionally, 44.3% of the undergraduate participants indicated that their psychological health had affected their academic performance at some point. On the topic of suicidality, 2.5% of undergraduates reported suicidal ideation in the past 4 weeks, while 0.4% reported having a suicide plan and 0.1% reported a suicide attempt in that time

frame (Eisenberg et al., 2007). These findings indicated that many college students may experience some degree of depression or anxiety and that a small portion also struggle with suicidal ideation.

Blanco et al. (2008) summarized data from the 2001–2002 National Epidemiological Survey on Alcohol and Related Conditions (NESARC) (Grant, Moore, & Kaplan, 2003) and compared psychological health diagnoses of 2,188 college students with 2,904 individuals in the same 19-25 age group who were not attending college. This data indicated that within the college student sample, 39.84% had been diagnosed with an Axis I disorder, 10.62% with a mood disorder, 20.37% with an alcohol use disorder, and 17.68% with a personality disorder (Blanco et al., 2008). All of these prevalence rates were slightly lower (about 1% to 3%) in the college student sample than the non-college student sample, with the exception of alcohol use disorders, which were higher in the college students. These findings indicated that while the prevalence of psychological health diagnoses in college students may be slightly lower in college students than in the general population, a significant portion of students do have serious psychological health concerns that may impact their academic performance and adjustment to college.

As illustrated previously, various studies of the prevalence of psychological health concerns in college students have generated different reports of the prevalence of these problems. It seems that this variation might be attributed to differences in the student populations sampled in each study, the instruments used in their research, and the specific disorders or psychological health concerns that were being screened. Despite the fact that these studies have reported a wide range of prevalence rates, as a whole they

seem to indicate that large numbers of college students deal with serious psychological health problems and that many may not be receiving adequate treatment while at college. Mowbray et al. (2006) reviewed additional literature corroborating this assertion and pointed out that college students often experience psychological health concerns as a result of situational crises that arise in their lives. Many factors may contribute to these situational crises and other psychological health concerns in college.

**Factors contributing to psychological health concerns in college.** A wide variety of problems and concerns can impact the psychological health of college students. Many students may experience difficulty with homesickness, relationship problems and break-ups, roommate difficulties, financial problems, varied types of identity concerns and a wide spectrum of other difficulties (Ducey, 2006). These situational concerns in addition to chronic diagnoses may lead many students to struggle with managing their psychological health during college.

Adaptation to college life is described by Dyson and Renk (2006) as an often stressful and difficult process for college freshmen. These researchers assessed the relationship of masculinity and femininity, levels of family and college stress, and coping strategies to adaptation to college. Instruments to assess each of these factors were administered to participants, and their findings indicated that higher levels of family and college stress predicted higher levels of depressive symptoms. Avoidant coping strategies also predicted depressive symptoms. Scores for masculinity and femininity additionally played an interesting role in predicting both the coping strategies and depressive symptoms in participants. Dyson and Renk (2006) explained:

With regard to male participants, masculinity was related positively to the use of problem-focused and emotion-focused coping strategies, whereas femininity was related positively to emotion-focused and avoidant coping strategies. In contrast, the femininity of female participants was related negatively to their ratings of depressive symptomatology and was related positively to the use of problem-focused and emotion-focused coping strategies. Finally, for female participants only, levels of depressive symptomatology were related positively to levels of family life and college change stress and negatively to the use of avoidant coping strategies. (p. 1241)

Overall, Dyson and Renk (2006) suggested that the factors they explored in the study may help college counselors and other student affairs professionals to identify which students may adapt well to college and those that may struggle with this adaptation. Assisting struggling students with developing more functional coping styles and lowering their levels of depressive symptoms may help them to learn how to effectively manage their adaptation to college and future life transitions.

Other researchers discuss the process of transitioning into the college environment and the impact it can have on college student psychological health using the term “adjustment” in place of “adaptation.” In a longitudinal study, Gerdes and Mallinckrodt (1994) examined three different types of adjustment (emotional, social, and academic) and their impact on student attrition. The researchers surveyed incoming freshman at a large university one month before they entered to assess their expectations coming into college and then sent a follow-up survey during the seventh week of the fall academic

semester to the students who responded to the initial survey. Six years after these students first enrolled in college, Gerdes and Mallinckrodt then examined their transcripts to determine each student's graduation and academic status. After examining the survey responses of students who had either graduated or were still enrolled as compared to students who had dropped out, the researchers found that overall, emotional and social adjustment items predicted student attrition at least as well or better than academic adjustment items (Gerdes & Mallinckrodt, 1994). These findings suggest that emotional, social and academic adjustment all play a significant role in whether students persist in college or leave before completing their degree. All of these types of adjustments likely play a key role in the psychological health of a college student, and Gerdes and Mallinckrodt (1994) provided suggestions for college counselors to assist students struggling with these transitions. Helping students to make healthy emotional, social and academic adjustments would likely have a significant positive impact on their psychological health as well as their college retention. Research by DeStefano, Mellot and Petersen (2001) indicated that participating in counseling does have a positive impact on students' adjustment to college.

In addition to situational factors and adjustment to college, academic factors can contribute to the psychological health of college students. Misra and McKean (2000) examined academic stress and its relationship with anxiety, time management and leisure satisfaction. Their results indicated a positive correlation between academic stress and anxiety. Trait anxiety specifically was a predictor of academic stress, illustrating that psychological health concerns can have an impact on academic performance. Time

management behaviors and leisure activities were both negatively correlated with academic stress, however time management had a more significant impact on reducing this stress. Female students in the study had more effective time management scores but lower leisure satisfaction scores than males, which may have contributed to the higher academic anxiety scores that were found in female participants. Misra and McKean (2000) pointed out that males may not actually experience less stressors than females, but rather might be socialized to reveal or react to these stressors less. Academic stress and other academic factors may lead to serious academic problems and even academic probation for some students.

### **Factors Influencing Academic Difficulty in College**

Academic preparation before college often has a significant impact on students' performance once they arrive at a higher education institution (Balduf, 2009; Friedman & Mandel, 2011; Saunders & Dwinell, 1985). Balduf (2009) pointed out that many students may even be high achievers at the high school level and never question their study skills or other academic skills because their high school coursework demands little of them. Both high achievers and underachievers who encounter little academic challenge in high school may reach college and find themselves struggling to prepare for the level of work that is expected of them. In Balduf's (2009) study, participants indicated academic problems in three categories, under-preparation for the work at their university, difficulty managing their time effectively, and problems with motivation and self-discipline. Many of these concerns seemed to stem from a lack of preparation and practice of these skills before arriving at college. Balduf (2009) suggested that time management and

motivational strategies should be introduced to all college freshmen and these students should be encouraged to investigate study skills courses as well. In another study Saunders and Dwinell (1985) highlighted the impact that under-preparation and lack of motivation can have on academic performance in college students.

Purswell, Yazedjian and Toews (2008) explored the role that social support and students' academic intentions had on academic behaviors in first-generation college students compared to continuing generation college students. Their results indicated that intention to complete certain academic tasks and behaviors was the only significant predictor of academic behaviors for first-generation college students. In participants whose parents had some college experience but did not complete a degree, peer support was the only significant predictor of academic behaviors. Students whose parents had earned a bachelor's degree or higher showed that intention, parental support, and peer support were all significant predictors of academic behaviors. Purswell et al.'s (2008) findings indicate that students from varying family educational backgrounds may have differing predictors of their academic behaviors and successes and therefore may have different needs in order to become successful.

Heavy substance use or substance abuse is another key contributor to academic problems for many college students (Svanum & Zody, 2001). In an examination of the impact of various psychological diagnoses on academic performance, Svanum and Zody (2001) found that substance use disorders were associated with lower semester GPAs in undergraduate students sampled at a large university. Only 12% of students in their sample met the criteria for a substance use disorder, but this type of disorder had a



consistently negative relationship with GPA, whereas other disorders examined had weaker associations. Alcohol abuse and dependence are particularly prevalent concerns for college students regardless of their academic status. In a large study of over 14,000 students at 119 different universities, Knight et al. (2002) found that 31% of participants met the diagnostic criteria for alcohol abuse and 6% met the criteria for alcohol dependence (Knight et al., 2002, p. 263) in the preceding year. Sullivan and Risler (2002) conducted a literature review on alcohol abuse and its impact on academic performance in college students. They corroborated the negative impact that heavy drinking or binge-drinking had on academic performance. Due to the prevalence of alcohol abuse and dependence in the college student population, it seems that it is a very pertinent factor to consider when working with students who are struggling academically or placed on academic probation.

The motivational behaviors that students develop may influence their academic performance as well. Dweck (1986) described both adaptive (or “mastery-oriented”) motivational patterns and maladaptive (or “helpless”) patterns of motivation in children. The adaptive pattern is characterized by behaviors such as pursuing challenging tasks and displaying persistence when obstacles are encountered, and Dweck (1986) explained that children who display this motivational pattern often enjoy mastering tasks and working through challenges. The maladaptive pattern consists of behaviors like avoiding challenges and exhibiting a lack of persistence when facing obstacles, and children displaying this pattern often experience negative affect or negative thoughts about themselves when they encounter a difficult situation (Dweck, 1986).

Dweck (2006) went on to expand her work on motivational patterns into a theory involving two different types of mindsets: the fixed mindset and the growth mindset. The fixed mindset is characterized by the belief that an individual's amount of intelligence, type of personality, or other characteristics are static and cannot be significantly changed. Conversely, the growth mindset is illustrated by a belief that traits such as intelligence can be expanded and improved through efforts and experiences. Dweck (2006) explained how the two mindsets can have a significant impact on the academic performance of college students. Students who have a fixed mindset may actively try to avoid challenging academic situations because they do not want to risk failure and may give up easily if they encounter an academic task they find to be difficult. Such experiences might even lead to negative beliefs about their ability to perform well in other academic situations. Students who operate from a growth mindset however are invigorated by the new academic challenges they might face in the college environment and thrive in this setting. They view a difficult course or a low grade as an opportunity to learn and improve for future courses or assessments. Dweck (2006) emphasized that an individual can change their mindset if desired, and often simply being aware when one is thinking about a challenge in a fixed way and purposefully considering the opportunities for growth in the situation may facilitate the transition from one mindset to the other.

A student's beliefs about their own ability to succeed in college may have an impact on their academic success or struggles in numerous ways (Hsieh, Sullivan, & Guerra, 2007; Mattern & Shaw, 2010). Mattern and Shaw (2010) explored the relationship between students' academic self-beliefs and a variety of different academic

outcomes. They found that students' academic self-beliefs were positively related to their academic outcomes, in that students who had more positive beliefs about their academic abilities tended to perform better academically. Moreover, the authors found that students with more negative self-beliefs about their writing or math abilities were more likely than other students to indicate that they would like to have help with these types of academic work. Hsieh et al. (2007) explored self-efficacy and goal orientation in students on academic probation compared to students in good academic standing and also concluded that self-efficacy had a positive relationship with academic standing. The findings of both of these studies seem to indicate that the beliefs a student holds about their own academic abilities may have a significant effect on their academic performance, and that university personnel need to be prepared to assist students with negative self-beliefs by helping them re-structure these ideas as well as provide them with academic assistance in the areas they find challenging.

The relationship of self-beliefs, social support and university comfort with academic success in college freshmen women was explored by Rayle, Kurpius and Arredondo (2006). They found that all of these factors were significant predictors of participants' academic persistence (decisions to stay enrolled in college), with social support being the strongest predictor, self-beliefs being the second strongest and university comfort third. This research illustrates the impact that social support, academic self-beliefs and students' comfort with their environment may have on academic success or concerns for many college women and possibly males as well.

Nicpon et al. (2006) found that perceived social support had a positive impact on student

persistence, while feelings of loneliness had the opposite effect. However, neither of these factors was related to students' actual GPAs in their sample (Nicpon et al., 2006).

### **Academic Self-Efficacy in College Students**

Academic self-efficacy beliefs are a specific type of self-beliefs related to academic skills and abilities. Pajares (1996) defines self-efficacy "in terms of individuals' perceived capabilities to attain designated types of performances and achieve specific results" (p. 546). In the academic context, academic self-efficacy refers to a student's perceptions regarding their capabilities to perform academic tasks and achieve specific desired results from those tasks. Studying for and taking tests, writing papers, and earning high grades are examples of academic tasks. Numerous studies have found that academic self-efficacy is significantly related to a student's academic performance (Elias & Loomis, 2002; Elias & MacDonald, 2007; Gore, 2006; Honicke & Broadbent, 2016; Lent et al., 1986; Putwain et al., 2013; Wood & Locke, 1987).

Academic self-efficacy beliefs can be influenced by varied sources from an early age. Bandura et al. (1996) investigated academic self-efficacy in children ranging in age from 11 to 14, and found that parents' beliefs about their child's academic efficacy as well as the child's own self-efficacy beliefs had an impact on the child's academic achievement. Children's perceptions about their efficacy at self-regulating their academic behaviors was additionally related to academic achievement. Zimmerman et al. (1992) found similar results in high school students. While these studies were limited to samples of students younger than college age, the impact of parents' efficacy beliefs and their impact on a child's academic achievement as well as their academic self-efficacy

beliefs could influence the academic self-efficacy beliefs that these children will develop and eventually hold as college students.

Academic self-efficacy beliefs appear to be influenced by other factors as well. Elias and MacDonald (2007) found that college students' prior academic performance influenced their academic self-efficacy as well as their academic performance in the present. Their analysis additionally indicated however that academic self-efficacy beliefs accounted for a significant amount of variance in present academic performance beyond that accounted for by past academic performance (Elias & MacDonald, 2007).

Self-efficacy beliefs in certain academic domains or topic areas may additionally be predictive of academic performance. Lent, Brown and Gore (1997) administered a general academic self-efficacy scale and two mathematics self-efficacy scales to students in introductory psychology courses and then analyzed these students' grades in mathematics courses, choice of occupations related to mathematics, and overall grades from university records. They found that self-efficacy beliefs on the scales predicted mathematics course choices and performance. In addition they found that the general academic self-efficacy scale seemed to be a better predictor of general academic performance (such as overall grades), whereas the mathematics self-efficacy scales better predicted math related performance. Choi (2005) found that self-efficacy beliefs specific to a certain course were a significant predictor of term grades, whereas more general academic self-efficacy beliefs were not.

Academic self-efficacy may play a particularly important role for students at the beginning of their college careers. Chemers et al. (2001) examined academic self-

efficacy and first year performance and adjustment in college students. They administered an academic self-efficacy scale, among scales measuring several other variables, to college students at the beginning of winter quarter, immediately after they had returned from the holiday break. The participants were assessed again near the end of the academic year. The researchers found that academic self-efficacy was strongly related to both academic performance and adjustment in these first year students.

Putwain et al. (2013) additionally studied academic self-efficacy and learning-related emotions in first year college students. Learning-related emotions were defined as “the affective experiences of students in settings promoting the development and assessment of achievement and competence” (Putwain et al., 2013, p. 635). The researchers assessed academic self-efficacy in their sample at the beginning of the students’ first semester and learning-related emotions at the beginning of the second semester. Self-efficacy in study-related skills and behaviors was found to be a predictor of better academic performance for the first semester and of more pleasant and less unpleasant learning-related emotions (Putwain et al., 2013).

In addition to predicting academic performance, academic self-efficacy has been found to be a predictor of other characteristics and behaviors in college students. Cassidy (2015) examined the relationship between academic self-efficacy and academic resilience, described as the tendency to stay motivated and perform well academically despite facing academic challenges or adversity. In the sample of college students studied, a significant positive correlation was found between the two variables and academic self-efficacy was found to be a significant predictor of academic resilience.

Lent et al. (1986) investigated academic self-efficacy as a predictor of academic performance and perceived career options. In addition to predicting academic performance, they found that academic self-efficacy was a significant predictor of the range of perceived career options in technical and scientific fields that students thought they could consider. These findings indicate that students with higher levels of academic self-efficacy may perceive more career options to pursue for their future than students who do not feel as academically self-efficacious. Elias and Loomis (2000) found a negative correlation between students' scores on an academic self-efficacy scale and the number of times they changed their major, further indicating that strong academic self-efficacy predicts confidence in other areas of students' academic careers.

Academic self-efficacy, stress, and academic success were investigated by Zajacova et al. (2005). These researchers administered instruments to assess each of these variables to a racially diverse group of college students. Their findings indicated that there was a negative correlation between academic self-efficacy and stress. High levels of stress were generally accompanied by low levels of academic self-efficacy and vice versa. In addition, they found that academic self-efficacy was a stronger and more consistent predictor of academic success than stress was. These findings indicated that while stress may have an impact on academic success, it can be situational and fleeting, whereas academic self-efficacy beliefs may consistently predict academic success.

Several scales have been created to measure academic self-efficacy. Many of these scales are specific to certain academic disciplines, such as the Mathematics Self-Efficacy Scale (Betz & Hackett, 1983) or the Self-Efficacy for Academic Milestones

Scale (Lent et al., 1986), which is meant to assess academic tasks experienced by science and engineering students. Broader scales of academic self-efficacy beliefs in college students include the Self-Efficacy for Broad Academic Milestones Scale (Lent et al., 1997), the Academic Self-Efficacy Scale (Elias & Loomis, 2000), and the College Academic Self-Efficacy Scale (Owen & Froman, 1988). The College Academic Self-Efficacy Scale (Owen & Froman, 1988) is a particularly concise and easy to use instrument to assess academic self-efficacy in college students.

### **Academic Stress in College Students**

Academic stress has a significant impact on many students while in college and can be prompted from a variety of different stressors (Abouserie, 1994; Agolla & Ongori, 2009; Archer & Lamnin, 1985; Ross et al., 1999; Shirom, 1986; Zeidner, 1992). In an investigation of college student stress, Villanova and Bownas (1984) found that students identified academic and monetary stressors as the most intense stressors that they experienced. Abouserie (1994) found that the most significant academic stressors for students sampled were examinations and the results of those exams, studying for exams, having too much work to complete, the amount of material to learn, a need to do well academically, and essays or projects. Research by Archer and Lamnin (1985) showed similar results but included professors, the class environment and career and future success as additional significant academic stressors.

Existing literature seems to point to significant gender differences in academic stress, both before and during college. Jones (1993) examined levels of academic stress in high school students and found that girls experienced more academic stress than boys.



While studying sources of academic stress in college students, Abouserie (1994) also found that academic stress was significantly higher in female students than in male students sampled. Zeidner (1992) found similar gender differences in research on academic stress conducted in Israel, suggesting that female students may experience higher levels of academic stress than male students across various cultures.

Cultural differences in academic stress experienced by American college students and international college students studying in the USA has additionally been explored (Misra & Castillo, 2004). The results of this research indicated that self-imposed academic stress (which included stressors such as feeling a need to “compete” academically with one’s peers and “win”) was the most significant source of academic stress for American students, while pressure was the greatest source for international students. American college students experienced more self-imposed academic stress than international college students experienced. These findings were contrary to the researchers’ hypotheses, and they considered the valuing of competitiveness in American culture as well as the stigma associated with expressing stress in some international students’ cultures as potential explanations.

Academic stress and positive affect in Chinese international students studying in the United States were explored by Liao and Wei (2014). These researchers investigated the Asian cultural values of family recognition through achievement and contingency of self-worth on academic competence as moderators in the association between these two variables, and found that academic stress had a negative relationship with positive affect, but family recognition through achievement was not a moderator. Contingency of self-

worth on academic competence was a moderator however in the relationship between academic stress and positive affect, where high levels of contingency of self-worth on academic competence increased the negative association. The researchers additionally found that lower levels of contingency of self-worth on academic competence decreased the negative association between academic stress and positive affect, which seemed to indicate that Chinese international students who place less self-worth on their academic performance may not face the same degree of potential psychological concerns when faced with academic stressors as students who base more of their self-worth in this area (Liao & Wei, 2014).

The effects of academic stress on students are varied in their manifestations and severity. High levels of academic stress have been found to be negatively associated with academic performance (Akgun & Ciarrochi, 2003; Struthers et al., 2000). Academic stress has been found to impact other domains of college students' lives outside of the academic realm as well. Weidner et al. (1996) assessed the impact of academic stress on health behaviors near the beginning of an academic term (when there would be low academic demands) and shortly before final exams (when academic demands would be high). They found that during the period of great academic demand (and in turn high stress), significant increases in negative affect and decreases in positive affect could be observed, while positive health behaviors decreased significantly. They found that the health behavior of exercise decreased the most in the period of academic stress. Their findings also indicated that women seemed to maintain "routine" health behaviors such as self-care, safety when operating vehicles and avoiding drugs more than men did, but they

did not show these higher scores on health behaviors where effort was required (such as maintaining healthy nutrition or exercising). Overall, Weidner et al.'s (1996) findings seem to indicate that academic stress can have a significant impact on various aspects of college students' health-related behaviors and in turn their overall health.

Academic stress may have an impact on serious psychological concerns as well. Ang and Huan (2006b) investigated the relationship between academic stress and suicidal ideation in Asian adolescents. They found a significant relationship between academic stress and suicidal ideation, however when depression was included in the model this relationship was reduced in magnitude (Ang & Huan, 2006b). Though depression was a mediator in this relationship, it still appeared that academic stress contributes to suicidal ideation to a greater extent in some students. These findings highlighted the importance of understanding academic stress in the college student population and assisting students in coping with this stress.

Academic stress may lead to unhealthy coping strategies in some students. Woolman, Becker, and Klanecky (2015) explored the relationship between academic stress and alcohol use in college students and whether prior exposure to trauma and resulting posttraumatic stress disorder (PTSD) symptoms were a mediator in this relationship. In their sample, academic stress did not have a relationship with drinking to cope behaviors on its own, but PTSD symptoms did mediate this relationship. These results indicated that students who have gone through difficult or traumatic experiences earlier in their lives may be more susceptible to using alcohol as a way to cope with academic stressors and potentially other stressors they may encounter in college.

Various coping strategies help to reduce academic stress in college students (Kausar, 2010; Struthers et al., 2000; Smith & Renk, 2007). Kausar (2010) examined students' academic workloads and several different types of coping strategies and their relationships with academic stress. As hypothesized in the study, academic workload was predictive of perceived stress. Negative relationships were shown between perceived stress and both active practical coping strategies (where proactive responses to stressors are acted upon) and avoidance coping strategies (where the stressor is avoided and efforts are directed toward other activities). These findings indicate that students experience a decrease in academic stress if they use any type of coping strategy, though the stress is likely to be persistent if it is avoided rather than actively and practically addressed. Similarly, the study by Struthers et al. (2000) found that higher academic stress was associated with more problem-focused type of coping behaviors as well as more emotion-focused type of coping, and Struthers et al. (2000) found a positive relationship between motivation and academic stress, suggesting that some students may become more motivated to work when academic stress causes them to feel that their grades are at risk.

Coping strategies and a number of other potentially mediating factors were examined in relation to academic stress by Smith and Renk (2007). These researchers found that use of problem-focused coping techniques led to a decrease in academic stress. This study also indicated that social support received from significant others showed a positive relationship with academic stress, while social support from parents did not show a significant relationship. These findings seemed to indicate that many college students who have significant others are likely to seek out and receive more social support from

their significant others when experiencing increased academic stress. Smith and Renk (2007) also found that general anxiety was a strong predictor of academic stress. Wilks (2008) also examined social support and academic stress and found a negative relationship between the two variables, and Fernández-González, González-Hernández, and Trianes-Torres (2015) similarly found a negative relationship between social support and academic stress as well as between optimism and academic stress in a sample of college students at a university in Spain.

Learned resourcefulness is another factor that may mediate the relationship between academic stress and academic performance (Akgun & Ciarrochi, 2003). Learned resourcefulness is defined as “a set of skills for regulating internal events such as emotions that might otherwise interfere with the smooth execution of a target behaviour” (Akgun & Ciarrochi, 2003, p. 287). The researchers first found that academic stress did have a significant negative effect on academic performance. They went on to find however that this negative effect was only demonstrated in students with low learned resourcefulness scores, whereas academic stress in students with high learned resourcefulness did not show an impact on their academic performance. These findings indicate that learned resourcefulness skills allow students to cope with academic stressors and perform their best academically, and helping students to develop these skills would assist them greatly in both of these realms.

Numerous scales and instruments exist to assess academic stress. Many of these scales have been created to assess academic stress in children. The High School Stressors Scale (Burnett & Fanshawe, 1997), the School Stressors Inventory for

Adolescents (Fanshawe & Burnett, 1991) and the Academic Expectations Stress Inventory (Ang & Huan, 2006a) are good examples of instruments created to measure academic stress in middle and high school students. Rocha-Singh (1994) created the Graduate Stress Inventory-Revised to assess academic stress in graduate students, while Alzaeem, Sulaiman, and Gillani (2010) created a Stress in Academic Life Scale for pharmacy students. Several scales have also been created to measure academic stress in college students, including the Academic Stress Scale (Kohn & Frazer, 1986), the Student Stress Inventory (Zeidner, 1992), the Academic Stress Questionnaire (Abouserie, 1994), and the Lakaev Academic Stress Response Scale (Lakaev, 2009). While each of these scales contributes to the literature and assessment of this variable, Kohn and Frazer's (1986) Academic Stress Scale offers a concise and specific method of measuring academic stress. The Academic Stress Scale has also been successfully utilized in other studies (Smith & Renk, 2007; Wilks, 2008).

### **Counseling Interventions with Academically At-Risk Students**

Existing literature describes a number of possible interventions for college counselors working with students experiencing academic struggles. Many of these interventions were described for use with students on academic probation, but the resources provided and skills targeted would likely be helpful for any student experiencing academic problems, including a lack of academic self-efficacy or problematic academic stress.

Brief mandatory counseling for students in academic jeopardy or placed on academic probation has been explored as a potentially helpful program (Schwitzer et al.,

1993). Schwitzer et al. (1993) combined the efforts of a university counseling center and financial aid office to notify students who received financial aid and whose GPA indicated they were close to being placed on probation (their GPA had fallen below a 2.3, with the criteria for placement on probation being a GPA below a 2.0) that they would need to complete a mandatory intervention program. To fulfill the requirements of the program, students first completed a written assessment measuring their study habits and attitudes as well as their reading comprehension skills. They were then required to attend one semi-structured counseling session related to their academic performance and concerns as well as their goals and expectations of themselves. The counselor additionally used the student's assessment results to provide feedback on study skills improvements. The financial aid office was notified of each student's completion of the requirements, but no other information pertaining to the student's assessment results or counseling session discussion was disclosed. The researchers found that students who participated in the mandatory counseling session were more likely to voluntarily use counseling afterward and that most participants also showed academic improvement.

In a similar vein a study by Wlazelek and Coulter (1999) found that students on probation who participated in counseling showed significant increases in GPA after a semester of counseling intervention. In this study, students who had below a 2.0 GPA at the end of the second semester that they were attending school full-time were deemed to be in "academic jeopardy" and notified by the university provost's office that they should schedule academic counseling through the university counseling center. Though this notification implied that students should follow through with this counseling, there were

no repercussions if they did not and many students did not have contact with the counseling center. Students who participated in even just one session of counseling demonstrated significant increases in GPA (Wlazelek & Coulter, 1999).

Kriner and Shriberg (1992) investigated a comparable non-mandatory counseling intervention where university freshmen who were placed on academic probation were sent personal letters from the counseling center staff expressing concern regarding their academic struggles and invited them to contact the counseling center to make an appointment. Students who scheduled an appointment and met with a counselor discussed their academic habits and problems with the counselor, received referrals to campus assistance offices relevant to their concerns, and were encouraged to return to the counseling center for assistance whenever they needed. The students who participated in these sessions showed statistically significant increases in GPA (Kriner & Shriberg, 1992).

Partnerships between counseling centers and faculty may be an additional intervention technique for assisting students who may be in a perilous academic situation. Coll and Stewart (2002) described a partnership between the faculty coordinator of an Introduction to Education course with multiple class sections and the university counseling center to identify and assist students in an education program who showed signs of academic problems. The first step in this intervention involved a faculty member from the Counselor Education department at the university visiting the education class sections and describing the benefits of counseling. Students interested in counseling were able to sign up for sessions at this time. The second step of the intervention entailed



the faculty coordinator of the education class sections identifying students who were in academic jeopardy because of poor attendance or failed assignments or examinations and contacting these students to offer a referral to counseling or an alternative research paper assignment to improve their grade in the course. Evaluations assessing academic and social integration were administered to all students in the class sections, and results indicated that the students who had received counseling services showed increases in both academic and social integration and in their confidence about their abilities to teach in the future (Coll & Stewart, 2002). Coll and Stewart (2008) also published the instrument that they created to assess academic integration, social integration, and career decidedness in students who may be academically at risk and emphasize its usefulness in these collaborative partnerships between academic program faculty and counseling center staff. The researchers focused solely on students in education programs and emphasized that the effectiveness of these intervention techniques and assessment instrument with students in other types of academic programs would have to be explored further.

Additional intervention strategies partner counseling center staff with academic departments. Kadar (2001) proposed a counseling liaison model of academic advising in which counseling center staff members are each assigned to work with specific academic departments. These counselors can then become knowledgeable in the academic resources available in their assigned departments and the unique needs of the students within that academic discipline. Kadar (2001) provides numerous suggestions for counselors to engage in outreach and connect with the students in their academic department, including attending introductory freshman classes to introduce themselves to

students in the various majors within the department, attending department faculty meetings and contacting faculty to maintain active communication, reaching out to students who are placed on probation in the department or whose academic performance indicates concerns, and even teaching orientation courses for freshmen in the majors within their department. Ideally these efforts would help all students to be aware of and connected with the most effective counseling services possible and provide academic, personal and retention benefits to any students in need of assistance in these areas.

Workshops led by counseling center staff for students who are struggling academically or who are on probation may be another effective form of intervention. The efforts of one university to provide students placed on academic probation with a series of five workshops to address both their academic concerns and the physiological stress caused by these concerns are documented by Nance (2007). Probation students were referred to the workshops, which began with various university officials sharing their academic trials as undergraduate students and, in some cases, their own experiences with academic probation in order to normalize the experience and instill a sense of hope in the students. Useful resources provided by a variety of campus offices were discussed with students and they were eventually paired with “study buddies,” in order for pairs of students who could relate to each other’s concerns to stay in contact with each other after the workshops and keep each other motivated to succeed. The researchers organizing the program found that Asian, Hispanic and African American students were disproportionately represented in the group of students who ended up on probation at

their university and designed the workshop program to be culturally sensitive to the expectations of many different cultural groups of students.

College counselors can play an important role in bolstering the academic success of students of color (Mills-Novoa, 1999). The author of the article uses the terms “students of color” and “faculty and staff of color” to describe students, faculty and staff at predominantly White academic institutions who do not identify as White. Counselors can become active in such a role by first becoming aware of the institutional and community barriers that are faced by students from various ethnic and racial backgrounds and becoming advocates to reduce and eliminate these barriers. Counselors should also be aware of the familial and cultural expectations related to education that students from various backgrounds face and how these expectations may affect their academic performance. Mills-Novoa (1999) also provides a number of suggestions supplied by students, faculty and staff of color for how college counselors can best assist students of color. Hiring more staff members representative of a variety of cultural and racial groups, creating and supervising peer support groups, and running and promoting programming to increase cultural sensitivity and awareness are all suggestions provided for college counselors to support students of color academically and socially.

Some research also suggests the use of certain counseling theories or techniques in order to effectively assist college students who are struggling academically. Santa Rita (1995) describes the use of Brief Solution-Focused Counseling (BSFC), based on the work of de Shazer (1985), with students who are on academic probation. In order to utilize BSFC with college students on academic probation, college counselors would first

help students to find exceptions to their problem in order to identify the best way to solve the problem. The counselor would then prompt students to reflect on unsuccessful solutions to their academic problem that they may have tried in the past. The counselor and student would then work together to identify what the events or markers will be viewed as evidence of success toward the desired solution in order for the student to be able to chart their progress and stay motivated toward academic success. The final step in BFSC would involve the counselor helping the student to focus on the future and identify what will be different in their future after they have completed counseling and their problem is gone. Santa Rita (1995) explains that this theoretical approach to counseling and the accompanying therapeutic techniques are particularly useful with this population of students because they help to get the student motivated and integrate their own needs and beliefs into the plan to resolve their academic dilemma, rather than creating suggestions or solutions based on what the university or counselor thinks will work for them.

The use of a mindfulness-based stress reduction (MBSR) program for academic evaluation anxiety was explored by Hjeltnes, Binder, Moltu, and Dundas (2015). The researchers conducted a qualitative study with a group of university students in Norway who had self-referred to a campus counseling center for assistance with academic evaluation anxiety and chose to participate in the 8-week MBSR program. The program itself consisted of two and a half hours of weekly counseling sessions, homework assignments on a daily basis, and in the sixth week of the course a one day retreat with other participants that included group discussions (Hjeltnes et al., 2015). One month

after students had completed the MBSR program, the researchers conducted semi-structured interviews individually with participants to investigate their experience of the program and how useful and practical they found the strategies covered in it to be. After analyzing the transcribed interviews, it was found that,

participants' descriptions of their experiences when taking the MBSR program clustered around five main themes: (1) finding an inner source of calm, (2) sharing a human struggle, (3) staying focused in learning situations, (4) moving from fear to curiosity in academic learning, and (5) feeling more self-acceptance when facing difficult situations. (Hjeltnes et al., 2015, para. 14)

Overall, the students who participated in the program seemed to find the mindfulness-based approach helpful in becoming more aware of their stress reactions and managing those internally as well as in staying focused in challenging academic situations. Rather than becoming distracted by the stress or anxiety they experienced in the middle of an academic task, the students felt better equipped to identify those feelings, manage them and continue working on the task. The program additionally allowed participants to connect with other students with similar concerns, therefore normalizing their own, and seemed to help them reach a feeling of self-acceptance when they experienced academic anxiety and stress where they felt better equipped to confront and manage those reactions rather than feel overwhelmed by them. Hanley, Palejwala, Hanley, Canto and Garland (2015) additionally found mindfulness to be positively associated with academic self-efficacy after a perceived academic failure in college students. Students who scored higher on a dispositional mindfulness scale tended to also

exhibit higher academic self-efficacy scores after they had experienced a failure in a testing environment.

Electronic tools could also play a role in counselors' work with students who are contending with academic stressors. de la Fuente et al. (2014) described an online tool called the *e-Coping with Academic Stress* utility that is intended to help college students assess their competencies for performing a variety of academic tasks and their cognitive, physiological and emotional responses to academic stressors. Once an individual completes the assessment, the tool additionally generates suggestions for improvement of behaviors in areas of concern. de la Fuente et al. (2014) emphasized that while the tool could be used by a student on their own, they recommended that it be utilized under the supervision of a psychological health care professional. This tool was developed by a team of researchers in Spain and Italy and it is unclear how generalizable its use would be for students in other countries, but it indicates the potential for counselors to utilize various electronic tools in their work with college students and the unique concerns they face.

Several additional goals and objectives may help to shape counseling sessions with college students who present with academic concerns. Bednar and Weinberg (1970) reviewed over twenty studies of therapeutic intervention programs for underachieving students and found that the common characteristics of those that resulted in improvements in student academic performance included notable structure rather than an unstructured approach, longer intervention lengths, counseling targeting the factors involved in a student's underachievement and involving their academic program, and that

they were tailored to the individual needs of the students. Wlazelek and Hartman (2007) offered numerous suggestions for assisting these students in academic jeopardy when they present for counseling. After discussing surface-level academic issues such as how a student's classes are going and what academic areas they are struggling with, a student's motivations to be in college can be an important early discussion to have. Students who are primarily in college because their parents want them to be may have different motivational issues than students who are in college to fulfill a specific career goal that they are struggling with. Time management and study skills are additional key topics of exploration. Behavioral and psychological concerns that could be underlying causes of academic problems should always be assessed. Both a student's academic strengths and areas of concern should be addressed in counseling, in order for strengths to be capitalized and weak areas to be overcome. Wlazelek and Hartman (2007) suggested that a key intervention strategy for this population should involve drawing upon a student's motivations in order to set realistic goals for their academic future. Meeting a student where they are at in their developmental process is key for initiating positive and lasting change. The researchers additionally stressed the importance that college counselors should place on being aware of all support resources available throughout their campus and community in order to refer students to any resource that may be able to aid in their progress toward academic and personal success.

The connection of counseling interventions to student retention may also be an important consideration within the population of college students who are experiencing academic concerns. Lee, Olson, Locke, Michelson and Odes (2009) did not find a

relationship between students' counseling experience and academic performance when they controlled for pre-college academic performance, however counseling experience was significantly associated with student retention, in that students who participated in counseling had higher retention rates. Illovsky (1997) found similar results. Retention is a prevalent concern for students struggling academically and students with psychological health concerns, and many other studies have illustrated the positive impact that receiving counseling services has on students' retention (Phillips-Miller & Morrison, 1999; Sharkin, 2004; Turner & Berry, 2000; Wilson, Mason, & Ewing, 1997).

### **Non-Counseling Interventions with Academically At-Risk Students**

Numerous college and university personnel outside of the campus counseling center come into contact with students who are experiencing academic concerns and play key roles in helping these students move toward academic success. Existing literature provides many suggestions for interventions and considerations that may be employed by support staff throughout any campus.

The importance of considering the personal characteristics of students struggling academically and assessing their individual needs in order to determine the best intervention strategies is important for all university staff members working with these students. Trombley (2000) found that more students on probation have jobs than students in good academic standing, were more likely to work full time, often had lower high school GPAs, and had children present in their households more often than students in good standing. These considerations may also apply to other students with academic problems and be important for a variety of professionals working with these students.



Professionals in university offices that are only open during standard business hours may need to be open to communicating with and assisting some students entirely over the phone or via email if a student works full-time during the day and cannot visit the office during operating hours. Academic advisors and other academic support staff could check high school GPAs of students they work with and be sure to especially emphasize to those students with lower pre-college GPAs the various support resources available around campus. Advisors or other professionals who work with numerous students who display academic concerns could additionally be cognizant of the fact that some of these students may have children and help the student to develop academic goals and solutions that work in tandem with their family responsibilities and goals.

An accurate assessment of academic stress or other concerns that students have is additionally important for the professionals who work with them. Misra, McKean, West and Russo (2000) found that faculty members frequently have different perceptions of academic stress in their students than the students perceive in themselves, with faculty often perceiving more academic stress and more reactions to academic stressors than students. College personnel of any sort who work with students who may be experiencing academic stress or other academic concerns might consider discussing academic stressors with these students in order to accurately assess their levels of academic stress and the sources of that stress.

A structured group program is another intervention that may be useful in improving the academic performance of students. Coleman and Freedman (1996) described a ten-session group seminar worth one academic credit hour covering topics

related to setting and attaining goals, interpersonal problem solving and developing social competence skills. In the research study, all students from one academic college at a university who were placed on probation were invited to participate in the seminar. Some interested students were placed on a waitlist for the seminar to form a control group. Students who participated in the group seminar had higher rates of removal from probation status and significantly higher GPAs and credit completion ratios than students in the control group.

A general study skills course may additionally have a significant impact on students who are experiencing academic difficulties. Wernersbach et al. (2014) examined the impact of taking a study skills course on the academic self-efficacy beliefs of college students. Students who were enrolled in a study skills course demonstrated lower levels of academic self-efficacy at the outset of the course than comparison students in a general psychology course did. After completing the seven week study skills course covering topics such as effectively studying for exams, managing one's time, and taking useful notes in class, students who took the class reached equivalent or higher levels of academic self-efficacy than the students in the comparison group (Wernersbach et al., 2014). Students who completed the course seemed to not only learn about suggested strategies for effective academic skills and habits, but to feel more confident about their ability to employ those skills in their own academic lives.

Programs involving several different university divisions may be effective interventions for students with academic concerns. A program involving the divisions of academic affairs, student affairs, and residence life at one college resulted in significant

increases in GPA for students who participated (“Residence Life,” 2005). The college provost sent letters to all first-year students who were placed on academic probation after their first term to inform them about a mandatory academic success meeting that was conducted by the counseling and career services office. The meeting served to help students examine why they ended up on academic probation and begin to develop plans for academic success in the current term. The list of all of these students was then forwarded to the residence life coordinators at the college, who divided the list and called all of the students to invite them to meet. As the meetings with residence life coordinators were not mandatory not all students attended them, but those who did were given the opportunity to discuss their academic situation and concerns one on one with a coordinator and receive recommendations for all campus resources that might be useful in their situation. Students additionally worked with the coordinators to set three individual goals for the semester. The coordinators checked in with students after midterm grades came out and their progress was assessed after the semester ended. The impact of participating in the program was very positive, with 39% of the students who attended both the mandatory academic success meeting and the coordinator meeting raising their GPA enough to be removed from probation and showing overall GPA increases of .31 on a 4.0 scale (“Residence Life,” 2005). This program seems to provide an example of how several university offices can work together to assist students on probation in improving their academic performance.

The impact of general support, encouragement, and guidance may play a key role in helping students who are struggling academically to find their way to success.

Barouch-Gilbert (2016) conducted interviews with students who had been on academic probation earlier in their academic careers but had regained good academic standing in order to examine what helped them to develop enhanced academic self-efficacy. A common theme that emerged from these interviews was that participants found support and encouragement from a variety of sources to be extremely beneficial in helping to build their feelings of academic self-efficacy while they were working through their probationary period. Family, friends, and university staff members (such as academic support staff and faculty) were all named as important sources of this support and encouragement. Vicarious experiences of seeing friends practice good academic habits they could model were also extremely beneficial to many students. Overall, the participants in the study frequently described the significant impact that messages of “you can do it” from others in their lives had on their development of an internal belief that “I can do this,” which was eventually reinforced with improved academic performance (Barouch-Gilbert, 2016).

Any intervention to assist students struggling academically should work to motivate and empower these academically at-risk students at its core. A motivational/empowerment model applied to students on probation was implemented by Kamphoff, Hutson, Amundsen and Atwood (2007). This program was implemented over several years at one university and focused on the topics of personal responsibility, positive affirmations, goal setting, life planning and self-management through the use of both individual and group interactions. After the academic outcomes of students who had participated in the program were analyzed over a four-year period, it was found that

students who had participated demonstrated significantly higher academic achievement in terms of GPA gains and retention rates than did students who did not participate (Kamphoff et al., 2007). The effectiveness of this program seem to indicate that the basic principles and topics that it is based upon may be helpful to implement into a variety of interventions and programs to help to motivate and empower students on probation.

### **Summary**

A review of literature related to the topics explored in this study was presented in chapter two. The prevalence of various psychological health issues in the college student population and common factors contributing to these concerns were discussed. Academic self-efficacy, academic stress and the factors that contribute to students struggling academically were outlined. Possible counseling and non-counseling interventions to assist college students who experience academic concerns were described. Chapter three includes a description of the methodology that will be employed in this study.

### Chapter 3: Methodology

The purpose of this study was to explore the potential impact of academic self-efficacy and academic stress on the psychological health of college students. The research design, sampling plan, participants, instrumentation, data collection and data analysis procedures used to examine this inquiry are addressed in this chapter.

#### Research Design

The relationships that the variables of gender, academic self-efficacy and academic stress had with the psychological health of college students were examined in this study. The researcher used a hierarchical-ordered regression analysis. This data analysis method was utilized for two reasons. First, the researcher hypothesized that academic stress would account for the largest amount of the variation in psychological health in comparison to the academic self-efficacy and gender in college students. Secondly, this order of regression was selected based on the existing literature related to these variables. Some studies show gender differences related to psychological health (American College Health Association National College Health Assessment Undergraduate Students Reference Group Executive Summary Spring 2015, 2015; Dyson & Renk, 2006; Misra & McKean, 2000), but gender was not expected to account for as much of the variation in psychological health as academic self-efficacy and academic stress. Though the relationship between academic self-efficacy and psychological health has not been explored in prior literature, many studies have found academic self-efficacy beliefs to be significantly related to academic performance (Elias & Loomis, 2002; Elias & MacDonald, 2007; Gore, 2006; Honicke & Broadbent, 2016; Lent et al., 1986; Mattern

& Shaw, 2010; Putwain et al., 2013; Wood & Locke, 1987) and to college adjustment (Chemers et al., 2001). It was hypothesized that academic self-efficacy would account for more variation in psychological health than gender, but less than academic stress. Previous studies have found a negative association between academic stress and academic performance (Akgun & Ciarrochi, 2003; Struthers et al., 2000) and have also found academic stress to be negatively associated with positive affect and positive health behaviors (Weidner et al., 1996). In addition to these findings, Ang and Huan (2006b) found academic stress to have a relationship with serious psychological concerns such as suicidal ideation, and it was therefore hypothesized that academic stress would account for the largest amount of the variation in psychological health. The research questions and hypotheses for this study were as follows:

**Research questions.**

1. Does gender account for a significant amount of the variation in the psychological health of college students as measured by the Mental Health Inventory (MHI)?
2. Does academic self-efficacy as measured by the College Academic Self-Efficacy Scale (CASES) account for a significant amount of variation in the psychological health of college students as measured by the Mental Health Inventory (MHI) after controlling for gender?
3. Does academic stress as measured by the Academic Stress Scale account for a significant amount of the variation in the psychological health of college

students as measured by the Mental Health Inventory (MHI) after controlling for gender and academic self-efficacy?

### **Research hypotheses.**

1. Gender will contribute to accounting for the variation in the psychological health of college students as measured by the Mental Health Inventory (MHI).
2. Academic self-efficacy as measured by the College Academic Self-Efficacy Scale (CASES) will contribute to accounting for the variation in the psychological health of college students above and beyond that accounted for by gender.
3. Academic stress as measured by the Academic Stress Scale will contribute to accounting for the variation in the psychological health of college students above and beyond that accounted for by gender and self-efficacy.

### **Sampling Plan**

The sample for this study was drawn from the population of undergraduate students at a public university in the Midwestern region of the USA. This university has about 17,000 undergraduate students attending its main campus.

Once approval was obtained from the Institutional Review Board (see Appendix A) and the University Registrar, potential participants were e-mailed from a list of enrolled students obtained from the University Registrar's office. The e-mail consisted of an invitation to participate as well as a link to an online questionnaire created and hosted on the online questionnaire software system Qualtrics. The e-mailed survey invitation additionally described the optional incentive associated with participation.



Students could choose to provide their e-mail address after taking the survey in order to be entered into a drawing to win one of three \$25 electronic gift cards for amazon.com.

It was determined that 119 participants were needed for a medium effect size in this study. Research has indicated that survey response rates are low in the college student population. In a study examining response rates in web and paper surveys administered to first year college students, Sax, Gilmartin and Bryant (2003) found that 17% of students responded to a web survey with a response incentive. Based on these findings, the survey questionnaire in this study was emailed to 1000 randomly sampled students. Four mailings were sent once a week to the sample of students, due to the low response rate received. Qualtrics was programmed to avoid subsequent emails being sent to students who already chose to participate. Though 200 potential participants started the survey, 54 of those surveys were missing scores for one or more of the variables that were examined in the study.

### **Participants**

The sample of participants was drawn from full-time undergraduate students on the main university campus. The university's criterion for being a full-time student is being enrolled for 12 or more credit hours during the current academic term.

### **Instrumentation**

Surveys were administered online. The first portion of the survey questionnaire consisted of the items from three instruments, one to assess psychological distress and well-being, another to evaluate academic self-efficacy, and a third to measure academic stress. The final section of the questionnaire was intended to collect basic demographic

data such as gender, class year, age and race. Questions about the number of credit hours the student was enrolled in, their academic major, whether they were a first generation college student, whether they were an international student, how they were paying for college, satisfaction with current living situation and probation status were additionally included. See Appendix B for the demographic survey questions. The demographic questions were designed in such a way that they could be compared to demographic information from the student body of the university as a whole in order to assess the representativeness of the sample. These instruments that comprised the questionnaire are described in the following sections.

**Mental Health Inventory (MHI; Ware, Johnston, Davies-Avery & Brook, 1979).** The Mental Health Inventory (MHI) was originally described in Ware, Johnston, Davies-Avery and Brook (1979) and is further explained in Veit and Ware (1983). The MHI consists of 38 items measuring psychological distress and well-being. Three subscales (anxiety, depression, and loss of behavioral/emotional control) fall under the psychological distress construct, while three different subscales (general positive affect, emotional ties and life satisfaction) comprise the psychological well-being construct. There are additionally eight items in a social desirability response set that are distributed throughout the instrument but are not a part of the calculation of the total score for the scale. The instrument was developed after being field-tested at six different sites across the nation that were part of the RAND Health Insurance Experiment (HIE) (Veit & Ware, 1983). The internal consistency reliability of the MHI estimated using Cronbach's Alpha ( $N = 5,089$ ) was high (0.96) (Veit & Ware, 1983). The validity of the subscales of the

MHI is described in depth in Ware et al. (1979). Discriminant validity tests indicated that the final MHI subscales differed significantly from the physical health constructs that were a part of the HIE and also differed significantly from each other in prediction of varied types of psychological health variables. Correlations between the MHI subscales and validity variables related to psychological health were statistically significant in the direction hypothesized by the researchers, leading them to conclude that “the validity of the MHI and its subscales as measures of mental health was strongly supported” (Ware et al., 1979, p. 113). The validity tests conducted by the researchers also substantiated the inclusion of all of the separate scales in the MHI (Ware et al., 1979).

Scoring of the MHI is described in detail by Davies, Sherbourne, Peterson and Ware (1988). Each item enquires about the frequency or intensity with which a participant has experienced a psychological symptom in the past month and includes a response scale with “1” generally indicating the most frequent or intense response and the highest number on the scale (“4”, “5”, or “6” depending on the number of possible responses for the given item) indicating the opposite response. In order to score the MHI, “all of the subscales are scored so higher scores indicate more of construct named by subscale’s label...the object of item scoring is to ensure that higher scores on each item reflect more of the construct named by the scale to which it belongs” (Davies et al., 1988, p. 50). Higher scores on the Psychological Well-Being scale denote positive psychological health states, while higher scores on the Psychological Distress scale show negative states. Consequently, responses to some items must be reverse scored to indicate more frequent occurrence of a positive or negative symptom of psychological

health depending on the scale the item is included in (Davies et al., 1988). After the items are scored accordingly in this manner, item scores are totaled to calculate the index score. Overall scores on the MHI can range from 38 to 226, with higher scores indicating less psychological distress and more psychological well-being during the previous month (Davies et al., 1988).

**College Academic Self-Efficacy Scale (CASES; Owen & Froman, 1988).** The College Academic Self-Efficacy Scale (CASES) was created by Owen and Froman (1988). The CASES is comprised of 33 items, each describing “routine, frequent academic behaviors in college students” (Owen & Froman, 1988, p. 4). Participants are asked to indicate how much confidence they have doing each of the behaviors on a 5-point Likert scale ranging from “Quite A Lot” to “Very Little” (Owen & Froman, 1988). In order to assess reliability, the researchers administered the instrument to a sample of 88 college students twice over a period of eight weeks. The internal consistency Alpha values for the two test administrations were .90 and .92 (Owen & Froman, 1988). In order to assess validity of the scale, the frequency of performing the academic tasks and the enjoyment of performing each task were examined. The CASES showed a reliability coefficient  $R$  of .78 for the criterion of frequency and  $R$  of .72 for the criterion of enjoyment. The CASES validity scores for both of these criteria “showed very strong incremental validity beyond that explained by GPA alone” (Owen & Froman, 1988, p. 5).

In order to score the CASES, responses of “Quite A Lot” receive a value of 5, with the values for each possible response decreasing to a value of 1 for the response “Very Little.” To calculate an overall CASES score, a mean score is calculated across

the items. The mean score is preferred over a sum of item responses in order to compensate for missing data in the event that participants skip any items on the scale (S. V. Owen, personal communication, May 12, 2012). Permission was obtained from one of the authors of the instrument to use the CASES (see Appendix C).

**Academic Stress Scale (Kohn & Frazer, 1986).** The Academic Stress Scale was developed by Kohn and Frazer (1986). The scale contains 35 items, each of which is an academic stressor that was identified by asking a sample of college students to name the most significant stressors experienced in their academic life. In Kohn and Frazer's (1986) original methodology, participants completing the scale were asked to compare each academic stressor on the scale to taking an examination. The participant was instructed to rate the stressor between 1 and 499 if the stressor was less stressful to them than taking an exam, between 501 and 1000 if the stressor was more stressful, and 500 if it was the same amount of stress as taking an exam. Though total scale scores are calculated for each participant, for the purpose of analyzing reliability and validity the researchers grouped the items into three subscales (Physical Stressors, Psychological Stressors, and Psychosocial Stressors), as well as assessed three significant factors contributing to academic stress (Environment, Perception, and Demand). The internal consistency reliability of the Academic Stress Scale estimated using Cronbach's Alpha ( $N = 498$ ) was high (.92). Split-half reliability estimates were calculated for each subscale and factor and ranged from .59 to .86. Accounting for all subscales and factors, the mean scale reliability was .88 (Kohn & Frazer, 1986).

Recent studies have utilized a Likert scale to simplify participant responses and scoring for the Academic Stress Scale (Smith & Renk, 2007; Wilks, 2008). Smith and Renk (2007) requested that participants rate each of the academic stressors on the Academic Stress Scale on a 5-point Likert scale ranging from Not At All Stressful (a value of 1) to Extremely Stressful (a value of 5). Scale scores were comprised of the sum of the scores a participant gave to each item. The internal consistency in the Smith and Renk (2007) study was satisfactory (.90). This form of scoring was utilized in the current study to make it easier for participants to respond and allow for more consistency across reported scores.

### **Data Collection Procedures**

The participants were solicited via an e-mail that contained an invitation to participate and a link to the online questionnaire. The questionnaire was created and hosted in the online questionnaire program Qualtrics. The first page of the questionnaire consisted of the description of informed consent, including the purpose of the research and potential risks and benefits. The fact that all responses would be anonymous and that no identifying information would be linked to participants was highlighted. If participants clicked that they agreed to the informed consent, they proceeded to the electronic survey. Participants had the option to provide their email address after completing the survey in order to be entered into a drawing to win an electronic gift card for amazon.com. If a participant chose to provide their e-mail address to be entered into the drawing, they clicked on a link leading to a separate Qualtrics survey page so that the e-mail address they entered was not linked to their responses in any way. A random

number generator was used to select the drawing winners. Electronic gift cards were e-mailed to the three winners of the drawing, providing some degree of anonymity even to those participants.

### **Data Analysis Procedures**

Once the data was collected, it was entered into the statistical software SPSS. Demographic data was summarized. The researcher investigated whether gender, academic self-efficacy and academic stress were predictive of psychological health in a sample of college students. There were three predictor variables and one criterion variable in this study. The predictor variables were gender, academic self-efficacy, and academic stress. The criterion variable was psychological health. It was hypothesized that gender, academic self-efficacy, and academic stress would account for variation in psychological health for the sample of college students.

A hierarchical regression analysis was performed to analyze the data. Each scale was used as a predictor variable and was entered in the following order: First, a single coding for gender; second, a single mean score for academic self-efficacy as defined by the CASES; and third, a single total score for academic stress as defined by the Academic Stress Scale. Psychological health as defined by a total score on the MHI was entered as the dependent variable. Hierarchical regression analysis requires that the order in which the predictor variables will be entered into the regression equation to be decided by the researcher prior to the analysis. The variables were entered in the following order:

Gender was entered as the first predictor variable. Academic self-efficacy was entered second. Academic stress was the last predictor variable entered into the equation.

It was hypothesized by the researcher that academic stress would account for a larger amount of the variation in psychological health above and beyond that accounted for by academic self-efficacy and gender.

### **Summary**

Chapter three consisted of a description of the methodology that was employed for this study. The research design, including the sampling plan, a description of participants, and the instrumentation that was used, was detailed. The data collection and analysis procedures were explained. Chapter four will present the results of the data collection and analysis.



## Chapter 4: Results

This chapter is comprised of four sections. The first section contains an overview of the preliminary analyses that were performed. In the second section, the descriptive statistics associated with the main variables of the study are outlined. The third section details the assumptions for multiple regression analysis. The final section describes the results of the data analysis of the three research questions and explains the exploratory and supplementary analyses that were performed.

The three research questions explored in this study are:

1. Does gender account for a significant amount of the variation in the psychological health of college students as measured by the Mental Health Inventory (MHI)?
2. Does academic self-efficacy as measured by the College Academic Self-Efficacy Scale (CASES) account for a significant amount of variation in the psychological health of college students as measured by the Mental Health Inventory (MHI) after controlling for gender?
3. Does academic stress as measured by the Academic Stress Scale account for a significant amount of the variation in the psychological health of college students as measured by the Mental Health Inventory (MHI) after controlling for gender and academic self-efficacy?

### Research Hypotheses

In order to further explore the research questions addressed above, the following research hypotheses were investigated.

1. Gender will contribute to accounting for the variation in the psychological health of college students as measured by the Mental Health Inventory (MHI).
2. Academic self-efficacy as measured by the College Academic Self-Efficacy Scale (CASES) will contribute to accounting for the variation in the psychological health of college students above and beyond that accounted for by gender.
3. Academic stress as measured by the Academic Stress Scale will contribute to accounting for the variation in the psychological health of college students above and beyond that accounted for by gender and self-efficacy.

### **Preliminary Analyses**

Prior to performing the statistical analyses data-cleaning procedures were utilized to remove cases of missing data for each variable examined in the study. These variables were psychological health, academic self-efficacy, academic stress, and gender. Two hundred potential participants started the survey, but 54 of those surveys were missing a substantial amount of data for one or more of the variables. These incomplete surveys were removed, resulting in 146 surveys that were usable for the data analysis.

### **Descriptive Statistics**

The final sample consisted of 146 undergraduate college students. In terms of gender, 69.2% (n = 101) of participants identified as female, while 30.8% (n = 45) identified as male. The participants in the sample were widely distributed in terms of class year, with 25.3% (n = 37) reporting that they were first year students, 21.9% (n = 32) reporting second year student, 24% (n = 35) reporting third year student, 23.3% (n = 34) reporting fourth year student, 2.7% (n = 4) reporting fifth year student, and 1.4% (n =

2) reporting sixth year student or above. Two participants (1.4%) did not report their class year. In terms of age, 8.2% (n = 12) reported that they were 18 years old, 13.7% (n = 20) reported an age of 19, 16.4% (n = 24) reported an age of 20, 21.2% (n = 31) reported an age of 21, 6.8% (n = 10) reported an age of 22, 1.4% (n = 2) reported an age of 23, 2.7% (n = 4) reported an age of 24, and 29.5% (n = 43) reported an age of 25 or older.

In terms of the race or ethnicity of the participants in the sample, the majority of the participants reported being Caucasian/White (86.3%, n = 126), while 4.8% (n = 7) reported being African American/Black, 4.1% (n = 6) reported being Asian, 2.1% (n = 3) reported being Hispanic/Latino, 1.4% (n = 2) selected Other, and 0.7% (n = 1) reported being American Indian or Alaska Native. One participant in the sample (0.7%) did not report their race. The vast majority of participants in the sample were domestic students (95.9%, n = 140), with four participants (2.7%) indicating they were international students and two participants (1.4%) not responding to the question. The descriptive statistics for the sample are presented in Table 1.

Table 1.

*Participant Gender, Class Year, Age, Race or Ethnicity, and Domestic or International**Student Status*

Variable	n	Percentage
<b>Gender (N =146)</b>		
Female	101	69.2%
Male	45	30.8%
<b>Class Year (N =146)</b>		
First Year	37	25.3%
Second Year	32	21.9%
Third Year	35	24.0%
Fourth Year	34	23.3%
Fifth Year	4	2.7%
Sixth Year or Above	2	1.4%
Did Not Report	2	1.4%
<b>Age (N =146)</b>		
18-19 Years Old	32	21.9%
20-21 Years Old	55	37.6%
22-23 Years Old	12	8.2%
24 or Older	47	32.2%
<b>Race or Ethnicity (N =146)</b>		
African American/Black	7	4.8%
American Indian or Alaska Native	1	0.7%
Asian	6	4.1%
Caucasian/White	126	86.3%
Hispanic/Latino	3	2.1%
Other	2	1.4%
Did Not Report	1	0.7%
<b>Student Status (N =146)</b>		
Domestic Student	140	95.9%
International Student	4	2.7%
Did Not Report	2	1.4%

Descriptive statistics were run for the scale variables broken down by the gender and class year demographic characteristics. These statistics are summarized in Table 2, Table 3 and Table 4.

Table 2.

*Means and Standard Deviations for Scale Variables Broken Down by Gender*

Variables	Male (n = 45)		Female (n = 101)	
	M	SD	M	SD
Academic Self-Efficacy	2.32	.57	2.36	.69
Academic Stress	105.31	27.49	114.87	24.11
Psychological Health	148.95	25.82	143.59	32.62

Table 3.

*Means and Standard Deviations for Scale Variables Broken Down by Class Year (First Year, Second Year, and Third Year)*

Variables	First Year (n = 37)		Second Year (n = 32)		Third Year (n = 35)	
	M	SD	M	SD	M	SD
Academic Self-Efficacy	2.33	.75	2.52	.54	2.53	.66
Academic Stress	105.24	26.18	112.68	23.88	114.91	25.36
Psychological Health	158.35	24.75	138.37	30.79	140.48	31.28

Table 4.

*Means and Standard Deviations for Scale Variables Broken Down by Class Year (Fourth Year, Fifth Year, and Sixth Year or Above)*

Variables	Fourth Year (n = 34)		Fifth Year (n = 4)		Sixth Year or Above (n = 2)	
	M	SD	M	SD	M	SD
Academic Self-Efficacy	2.11	.58	1.77	.18	2.34	.49
Academic Stress	115.17	24.86	124.00	25.45	97.00	65.05
Psychological Health	145.11	31.07	118.25	33.02	114.00	15.55

### **Reliability**

The reliability of each of the measures, namely the College Academic Self Efficacy Scale, the Academic Stress Scale and the Mental Health Inventory, was assessed. The College Self Efficacy Scale and the Academic Stress Scale reliability indicators were .944 and .943 respectively while the Cronbach's Alpha for the Mental Health Inventory was .518. Full results for the reliability testing of the scales are included in Table 5.

Table 5.

*Means, Standard Deviations and Cronbach's Alpha for the Scales*

Variables	M	SD	Cronbach's Alpha
Academic Self-Efficacy	77.13	22.003	.944
Academic Stress	113.53	24.178	.943
Psychological Health	171.52	11.539	.518

**Testing of Assumptions for Regression Analysis**

There are several assumptions of multiple regression that must be met in order to accurately interpret the results of a regression analysis. According to Osborne and Waters (2002), these assumptions are that the variables examined in the study are normally distributed, that there is a linear relationship between the independent variables and the dependent variables, that the variables are measured reliably and without error, and that across all levels of the independent variables the variance of errors is the same (which is known as homoscedasticity).

To assess the normality of the residuals in the regression, SPSS was used to generate histograms of the normality plots. Visual examination of the histograms indicates that the normality of the distribution was met. In addition the Kolmogorov-Smirnov and Shapiro-Wilk tests were conducted to assess normality. Normality appears to be violated for academic self-efficacy and academic stress, as the Shapiro-Wilk test was significant ( $p < .05$ ) for these variables. Psychological health appears to be normally distributed ( $p > .05$ ). The results of the normality tests are summarized in Table 6.

Table 6.

*Tests of Normality for All Variables*

Variables	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Academic Self-Efficacy	.066	146	.200*	.969	146	.002
Academic Stress	.070	146	.079	.980	146	.030
Psychological Health	.063	146	.200*	.986	146	.145

Note: \*This is a lower bound of the true significance.

The residual plots were examined to assess linearity. The relationships between the independent variables and the dependent variable indicated a linear pattern.

### Correlations

The Pearson correlation coefficients were also calculated to assess the relationships between each of the variables and psychological health. The results indicated a negative correlation between academic stress and psychological health ( $r = -.466$ ) and a negative correlation between academic self-efficacy and psychological health ( $r = -.357$ ). Gender had a minimal correlation with psychological health ( $r = -.081$ ). There was a positive correlation between academic self-efficacy and academic stress ( $r = .414$ ). The correlation coefficients between all of the variables can be found in Table 7.



Table 7.

*Pearson Correlations between Variables and Psychological Health*

		1	2	3	4
1	Psychological Health	-	-.081 <sup>b</sup>	-.357 <sup>a</sup>	-.466 <sup>a</sup>
2	Gender	-.081 <sup>b</sup>	-	.031 <sup>c</sup>	.174 <sup>d</sup>
3	Academic Self-Efficacy	-.357 <sup>a</sup>	.031 <sup>c</sup>	-	.414 <sup>a</sup>
4	Academic Stress	-.466 <sup>a</sup>	.174 <sup>d</sup>	.414 <sup>a</sup>	-

<sup>a</sup> $p < .001$  <sup>b</sup> $p = .166$  <sup>c</sup> $p = .355$  <sup>d</sup> $p = .018$

**Primary Analysis Results**

**Testing the research hypotheses.** In order to test the research hypotheses, a three step hierarchical multiple regression was performed using Mental Health Inventory (MHI) as the dependent variable. Gender was the predictor variable entered at the first step. The College Academic Self-Efficacy Scale (CASES) scores were entered as the next predictor in the hierarchical regression model. The Academic Stress Scale score was entered into the equation last. The sequence of entries was premised on the hypothesis (which was guided by the literature review) that gender would account for the least amount of the variation in the mental health of college students and that academic stress would be a stronger predictor of mental health than academic self-efficacy.

To test for multicollinearity, the tolerance and variance inflation factor (VIF) values were assessed at each step of the regression analysis. Tolerance remained greater

than .10 and VIF factors were less than 10, which indicated that multicollinearity was not a concern in the regression analyses. Collinearity statistics can be found in Table 8.

Table 8.

*Collinearity Statistics for Hierarchical Multiple Regression*

Regression Model	Tolerance	VIF
1. Gender	1.00	1.00
2. Gender	.99	1.00
Academic Self-Efficacy	.99	1.00
3. Gender	.96	1.03
Academic Self-Efficacy	.82	1.21
Academic Stress	.80	1.24

**Research hypothesis 1.** Gender will contribute to accounting for the variation in the psychological health of college students as measured by the Mental Health Inventory (MHI).

The hierarchical multiple regression results indicate that in the first step of the analysis, Gender did not contribute significantly to the regression model.  $F(1, 144) = .949, p = .332. R = .081. R^2 = .007$ . The null hypothesis was not rejected. Gender only accounted for 0.7% of the variation in MHI scores. The results of the analysis are presented in Table 9.

Table 9.

*Regression Analysis for Gender Predicting Psychological Health*

Predictor	B	SE	$\beta$	<i>df</i>	Sig.	t
Gender	-5.361	5.504	-.081	1	.332	-.974

Note:  $R^2 = .007$ .

**Research hypothesis 2.** Academic self-efficacy as measured by the College Academic Self-Efficacy Scale (CASES) will contribute to accounting for the variation in the psychological health of college students above and beyond that accounted for by gender.

The introduction of the average CASES score at the second step of the regression accounted for an additional 12.6% of the variation in MHI scores and this change in  $R^2$  was significant,  $F(2, 143) = 10.935, p = .000. R = .364. R^2 = .133. R^2 \text{ Change} = .126$ . The null hypothesis was rejected. The results of the analysis are presented in Table 10.

Table 10.

*Regression Analysis for Academic Self-Efficacy Predicting Psychological Health Above and Beyond that Accounted for by Gender*

Predictor	B	SE	$\beta$	<i>df</i>	Sig.	t
Gender	-4.633	5.164	-.070	1	.371	-.897
Academic Self-Efficacy	-16.608	3.642	-.355	2	.000	-4.560

Note:  $R^2 \text{ Change} = .126$ .

**Research hypothesis 3.** Academic stress as measured by the Academic Stress Scale will contribute to accounting for the variation in the psychological health of college students above and beyond that accounted for by gender and self-efficacy.

The introduction of the Academic Stress Scale score in the final step of the regression accounted for an additional 11.7% of the variation in MHI scores and also represented a significant change in  $R^2$ ,  $F(3, 142) = 15.738$ ,  $p = .000$ .  $R = .500$ .  $R^2 = .250$ .  $R^2$  Change = .117. The null hypothesis was rejected. The results of the analysis are presented in Table 11.

Table 11.

*Regression Analysis for Academic Stress Predicting Psychological Health Above and Beyond that Accounted for by Gender and Academic Self-Efficacy*

Predictor	B	SE	$\beta$	<i>df</i>	Sig.	t
Gender	-.559	4.897	-.008	1	.909	-.114
Academic Self-Efficacy	-9.303	3.738	-.199	2	.014	-2.489
Academic Stress	-.460	.098	-.382	3	.000	-4.703

Note:  $R^2$  Change = .117.

Table 12 summarizes the  $R^2$  change values throughout the hierarchical regression.

Table 12.

*R<sup>2</sup> Change throughout Hierarchical Regression*

Model	R <sup>2</sup> Change	Sig.
1.	.007	.332
2.	.126	.000
3.	.117	.000

The researcher in this study decided a priori on a hierarchical model with the predictor variables being entered into the model in a specific order that was based on previous literature and on an intuitive sense of the researcher regarding which of the predictors would account for the largest variation in the mental health of college students. Although the hierarchical model selected resulted in significant findings specifically as it relates to academic self-efficacy and academic stress, the researcher conducted further analyses to determine whether the findings will be different if the three predictor variables were entered into the regression model simultaneously. When the three predictor variables were entered as a block, results indicate that gender, academic self-efficacy and academic stress combined accounted for 23.4% of the variation in mental health, [ $F(3, 142) = 15.738, p < .001. R = .500. R^2 = .250. Adjusted R^2 = .234$ ]. Additionally, in this model, similar to the hierarchical model, gender was not a significant predictor of psychological health ( $\beta = -.008, t(142) = -.114, p = .909$ ), whereas academic self-efficacy ( $\beta = -.199, t(142) = -2.489, p = .014$ ) and academic stress ( $\beta = -.382, t(142) = -4.703, p < .001$ ) were significant predictors.

### **Further Exploration of Mental Health Inventory**

Based on the relatively low reliability indicator of the Mental Health Inventory (.51), the researcher decided to examine the Mental Health Inventory in greater detail by conducting an item analysis of the 38 item scale. The item analysis was conducted using SPSS and an examination of the outputs indicated that item #8 had the most negative impact on the reliability of the scale, and by deleting that question the Cronbach's Alpha for the scale improved to .554. Subsequent item analysis was conducted and it was found that by removing item #22 the Cronbach's Alpha for the scale improved to .583. This process was repeated where the question in each item analysis with the most negative impact on the reliability of the scale was deleted until 5 items were removed. The subsequent questions removed were item #34 raising the Cronbach's Alpha to .616, item #18 raising the Cronbach's Alpha to .665, and item # 26 raising the Cronbach's Alpha to .701. This process indicated that the removal of these items had a significant impact on the overall reliability of the scale.

An oblique exploratory factor analysis of the Mental Health Inventory was conducted to examine how the items clustered together. The Kaiser-Meyer-Olkin measure of sampling adequacy was .936, which suggested that the data were appropriate for this type of analysis. The Bartlett's test of sphericity was significant ( $p = .000$ ), which indicated that there was adequate correlation between the variables for factor analysis to be conducted. Principal axis factoring showed six factors in the scale, with six factors possessing eigenvalues greater than 1.00. These six factors together accounted for 66.62% of the total variation in MHI scores. The pattern matrix (see Appendix D)

also indicated that the MHI has six factors. Item #8 showed cross loading on four factors on the pattern matrix. When item #8 was deleted and the factor analysis was conducted again, the number of factors found was reduced to five. When all five of the items that were deleted in the item analysis were removed and the factor analysis was performed again, five factors were still found.

Descriptive statistics were run to explore the Psychological Distress Subscale and the Psychological Well-Being Subscale of the Mental Health Inventory further. These statistics are summarized in Table 13.

Table 13.

*Means and Standard Deviations for Psychological Distress Subscale and Psychological Wellbeing Subscale of the Mental Health Inventory*

	M	SD
Psychological Distress	90.17	18.19
Psychological Wellbeing	47.14	12.00

### **Examination of Traditionally Aged College Student Participants in Comparison to Non-Traditionally Aged College Student Participants**

Further analysis was additionally performed to examine the gender, descriptive statistics and correlations of the variables for participants who were traditionally aged college students (ages 18 to 23) in comparison to the participants who were older than

traditionally aged college students (age 24 and older). These findings are summarized in Table 14, Table 15, Table 16 and Table 17.

Table 14.

*Gender of Traditionally Aged College Student Participants and Non-Traditionally Aged College Student Participants*

	Male	Female
Traditionally Aged	39	60
Non-Traditionally Aged	6	41

Table 15.

*Means and Standard Deviations of Scale Scores for Traditionally Aged College Students and Non-Traditionally Aged College Students*

Variables	Traditionally Aged (n = 99)		Non-Traditionally Aged (n = 47)	
	M	SD	M	SD
Academic Self-Efficacy	2.31	.69	2.41	.57
Academic Stress	109.51	26.28	117.00	23.19
Psychological Health	145.86	31.27	143.93	29.75



Table 16.

*Pearson Correlations between Scale Variables in Traditionally Aged College Student**Participants*

		1	2	3
1	Psychological Health	-	-.460 <sup>a</sup>	-.511 <sup>a</sup>
2	Academic Self-Efficacy	-.460 <sup>a</sup>	-	.517 <sup>a</sup>
3	Academic Stress	-.511 <sup>a</sup>	-.460 <sup>a</sup>	-

<sup>a</sup>  $p < .001$ 

Table 17.

*Pearson Correlations between Scale Variables in Non-Traditionally Aged College**Student Participants*

		1	2	3
1	Psychological Health	-	-.077 <sup>e</sup>	-.353 <sup>f</sup>
2	Academic Self-Efficacy	-.077 <sup>e</sup>	-	.095 <sup>g</sup>
3	Academic Stress	-.353 <sup>f</sup>	.095 <sup>g</sup>	-

<sup>e</sup>  $p = .605$  <sup>f</sup>  $p = .015$  <sup>g</sup>  $p = .527$ 

The means and standard deviations of the scale scores were quite similar between the traditionally aged and the non-traditionally aged college students in the sample. The correlations between the scale variables in these two groups of participants did differ

however. The correlations between all of the scale variables were significant in the traditionally-aged college students portion of the sample, whereas only the correlation between psychological health and academic stress was significant in the non-traditional college student participants.

### **Summary**

In this chapter, the outcomes of the research study were detailed. The preliminary analyses conducted were outlined. The demographic characteristics of the participants were described. The assumptions for conducting regression analyses were reviewed. The results of the hierarchical multiple regression analyses used to investigate the three research questions were reported. Lastly, the supplementary analyses performed were summarized. The next chapter includes a discussion of these results, as well as an exploration of the implications, limitations, and suggestions for future research.

## **Chapter 5: Summary, Discussion and Limitations**

The first chapter of this study contained a description of the study's background, the statement of the problem to be explored, an explanation of the significance of the study and the research questions and hypotheses. The second chapter consisted of a review of previous literature examining the topics investigated in this study. The third chapter detailed the research design that was utilized to explore the research questions. The fourth chapter described the results of the study and data analyses that were conducted. This fifth and final chapter contains a summary of the study at hand and an interpretation of the findings of the analyses performed to investigate the research questions in this study. A discussion of these findings and their implications for professionals who work with college students is included. The limitations of this study are additionally addressed and suggestions for future research on this topic are provided.

### **Summary of the Current Study**

The objective of this study was to investigate academic self-efficacy and academic stress as predictors of psychological health in college students. The researcher also assessed whether there was a significant difference in psychological health between male and female students. A random sample of undergraduate college students at a Midwestern public university were emailed a survey containing instruments that evaluated these variables. The final sample for the study consisted of 146 students. A hierarchical multiple regression analysis, as described in the previous chapter, was performed to investigate the following research questions:

1. Does gender account for a significant amount of the variation in the psychological health of college students as measured by the Mental Health Inventory (MHI)?
2. Does academic self-efficacy as measured by the College Academic Self-Efficacy Scale (CASES) account for a significant amount of variation in the psychological health of college students as measured by the Mental Health Inventory (MHI) after controlling for gender?
3. Does academic stress as measured by the Academic Stress Scale account for a significant amount of the variation in the psychological health of college students as measured by the Mental Health Inventory (MHI) after controlling for gender and academic self-efficacy?

## **Discussion**

**Research question one.** Does gender account for a significant amount of the variation in the psychological health of college students as measured by the Mental Health Inventory (MHI)?

Gender was not a significant predictor of psychological health in this study. Gender accounted for only 0.7% of the variation in MHI scores when it was introduced at the first step of the hierarchical regression analysis.

This finding differed from what was predicted based on the research of Dyson and Renk (2006); that is, scores for masculinity and femininity were related to both the coping strategies and depressive symptoms in male and female participants. Misra and McKean (2000) also found differences between male and female students in academic related anxiety. Jones (1993), Abouserie (1994), and Zeidner (1992) all found academic

stress to be significantly higher in female students than in male students, which led to the expectation that gender would play a role in the variation of psychological health in college students. In this study, the male and female participants in the sample did not display statistically significant differences in psychological health. This finding could potentially be explained by a variety of factors. Misra and McKean (2000) suggested that the male students in their study may not have actually experienced fewer stressors or academic anxiety than the female students, but rather that the male students may have been socially trained to react less to such stressors or to not share such reactions with others. The male students who chose to participate in this study may have simply responded more honestly about their stressors and concerns. Female participants comprised almost 70% of the total sample and 87% of the non-traditionally aged students in the sample, so this uneven distribution of female and male participants could account for the fact that gender was not a significant predictor of psychological health in this study. It is also possible that the MHI was not sensitive to the way that men and women might respond to items differently.

**Research question two.** Does academic self-efficacy as measured by the College Academic Self-Efficacy Scale (CASES) account for a significant amount of variation in the psychological health of college students as measured by the Mental Health Inventory (MHI) after controlling for gender?

Academic self-efficacy was a significant predictor of psychological health in this study. The introduction of the CASES score at the second step of the hierarchical regression accounted for an additional 12.6% of the variation in MHI scores above and

beyond that accounted for by gender. The statistical analyses in this study also indicated that there was a negative correlation ( $r = -.357$ ) between academic self-efficacy and psychological health.

These findings were not in line with expected results based off of previous research. The negative correlation between academic self-efficacy and psychological health was not predicted. Mattern and Shaw (2010) found that student's academic self-efficacy beliefs were positively related to their academic outcomes, which in turn was expected to have a positive relationship with psychological health. Though the correlation coefficient did not indicate a strong negative relationship between academic self-efficacy and psychological health, the direction was not expected. It is possible that the reliability issue of the MHI scale played a role in this result. The positive correlation between academic self-efficacy and academic stress ( $r = .414$ ) indicated that as academic self-efficacy scores increased, academic stress scores increased as well. It could be possible that some students who scored highly on the CASES scale, and therefore reported high self-efficacy beliefs on many academic tasks, were also highly concerned about performing well academically, which could potentially have a negative impact on their psychological health.

The finding that academic self-efficacy would be a significant predictor of psychological health was predicted due to prior studies that indicated academic self-efficacy beliefs in students are significantly related to academic performance (Elias & Loomis, 2002; Elias & MacDonald, 2007; Gore, 2006; Honicke & Broadbent, 2016; Lent

et al., 1986; Putwain et al., 2013; Wood & Locke, 1987) as well as adjustment in first year college students (Chemers et al., 2001).

**Research question three.** Does academic stress as measured by the Academic Stress Scale account for a significant amount of the variation in the psychological health of college students as measured by the Mental Health Inventory (MHI) after controlling for gender and academic self-efficacy?

Academic stress was a significant predictor of psychological health in this study. The introduction of the Academic Stress Scale score in the last step of the hierarchical regression analysis accounted for an additional 11.7% of the variation in MHI scores above and beyond that accounted for by gender and academic self-efficacy. The statistical analyses performed in this study also found a negative correlation ( $r = -.466$ ) between academic stress and psychological health. In this sample, higher academic stress scores tended to correspond with lower psychological health scores.

These findings aligned with prior research, which found academic stress to not only be negatively associated with academic performance (Akgun & Ciarrochi, 2003; Struthers et al., 2000) but to also be associated with increases in negative affect and decreases in positive affect and positive health behaviors (Weidner et al., 1996). Ang and Huan (2006b) even found a significant relationship between academic stress and suicidal ideation in Asian adolescents. The level of academic stress a student experiences seems to play a key role in both their academic performance and their overall psychological health. While some degree of academic stress could be optimal in helping students stay

motivated, the findings of this study indicate that higher academic stress could have a negative impact on psychological health in college students.

Overall, both academic self-efficacy and academic stress both contributed significantly to some of the unique variation in MHI scores (12.6% for academic self-efficacy and 11.7% for academic stress). Academic stress did not account for more variation in MHI scores than academic self-efficacy, as was predicted. The hierarchical regression model was chosen for this study because it was expected that all three independent variables (gender, academic self-efficacy, and academic stress) would contribute to the variation in psychological health scores, but that academic stress would contribute the most to the variation in psychological health scores out of the three independent variables based on previous studies. When a regression analysis was run entering all three of the independent variables at the same time rather than in steps, there was no significant difference between the results of that analysis and the hierarchical one. The MHI could contribute to this lack of difference between the predictors in that it is an instrument normed on a clinical population, not college students.

### **Implications**

The results of this study indicate that academic self-efficacy and academic stress play a role in the psychological health of college students. Previous studies have found that when students believe they are capable of performing the academic tasks expected of them in college, they seem to experience better psychological health. Though the correlation between these variables was negative in this study, academic self-efficacy certainly seems to be an important topic in the academic lives of college students. Higher



levels of academic stress in students seem to correspond with lower psychological health scores in previous research and in this study. For these reasons, higher education professionals should be aware of concerns in these areas and integrate techniques to help students improve their academic self-efficacy and mediate academic stress into their work with college students.

**College counseling center staff.** College counseling center staff clearly play a key role in assisting students who struggle with mental health concerns, many of which may be compounded by academic struggles. Academics play an integral role in the lives of college students, and while students may present other concerns first when seeking counseling, academic difficulties should be discussed to examine their potential contribution to the student's overall psychological health. College counselors could work to accomplish this goal by clearly assessing academic stress and level of perceived academic self-efficacy in the initial stages of the counseling relationship with students who seek their services. College counseling centers might include questions about these factors on intake instruments or in intake interviews if they are not already present. Other electronic assessments similar to the *e-Coping with Academic Stress* utility described by de la Fuente et al. (2014) could be used as tools for counselors to help students assess their current academic competencies and their cognitive, physiological and emotional responses to the stressors they face in their academic lives. This information could help to identify areas of concern and structure plans to address these concerns in ongoing counseling work.

Counseling centers might also reach out to students who are not performing well academically to offer their services and attempt to intervene with them before academic or psychological concerns grow. Counseling centers might initiate this contact to struggling students on their own or through partnering with other university offices. Kriner and Shriberg (1992) summarize a study in which a college counseling center reached out to university freshmen on academic probation with personalized letters to encourage them to make a counseling appointment to discuss their academic concerns. Schwitzer et al. (1993) highlighted the efforts of a college counseling center and financial aid office partnering together to reach out to students who were receiving financial aid and whose academic performance was close to academic probation status to require them to complete a mandatory intervention program involving a self-assessment and one semi-structured counseling session with a counseling center staff member. Wlazelek and Coulter (1999) discussed a counseling center partnering with a university provost's office to notify students who were at the university's "academic jeopardy" status at the end of their second semester that they should schedule academic counseling at the campus counseling center. In all three of these studies, students who followed through and participated in at least one counseling session showed academic improvement. Contacting students who are not performing well academically and encouraging them to meet with counseling center staff may be a helpful strategy in assisting students struggling with academic concerns and potentially psychological health issues.

In order to help students to develop skills to cope with academic stress and increase academic self-efficacy, counselors could employ a variety of techniques.

Counseling center staff could lead workshops to address academic concerns and corresponding stress reactions as described by Nance (2007). When working individually with students struggling academically, counselors could consider utilizing techniques rooted in Brief Solution-Focused Counseling (BSFC). Santa Rita (1995) suggested BSFC for use with students in need of academic assistance as it would involve counselors assisting students in identifying exceptions to their academic concerns, previous unsuccessful solutions to those concerns, identifying goals and markers that students could chart on their path to their desired academic and personal goals, and helping the student to look toward the future and analyze what will be different when their problem is resolved. This reflection and planning could help students in difficult academic situations to feel motivated and to play an active role in improving their academic and personal concerns.

Mindfulness-based counseling techniques could additionally be useful for counselors to consider when working with college students struggling with academic stress or low academic self-efficacy. Hjeltnes et al. (2015) conducted a qualitative study with students who found a mindfulness-based stress reduction program helpful in identifying and managing their stress reactions in academically challenging situations, which also helped them to stay focused on the academic task at hand in these situations rather than becoming distracted by their academic stress. Hanley et al. (2015) found mindfulness to be positively associated with academic self-efficacy in college students who had experienced a perceived academic failure. Counselors could consider using mindfulness-based techniques to help students struggling academically to be more aware

of their internal dialogues about their academic abilities and to also be more cognizant of their physiological and emotional reactions to academically stressful situations. This could be accomplished in individual counseling sessions or in a group format, as the participants interviewed by Hjeltnes et al. (2015) found discussing their academic stressors and their stress reactions in a group to be helpful in normalizing their own experiences.

Kausar (2010) found that any coping strategies that students employed were helpful in reducing academic stress, though avoidant strategies were more likely to result in persistent stress recurring for the students than if active and practical coping strategies were employed. Counselors could play a key role in assisting students in developing and utilizing these more active strategies to cope with academic stress and other types of stress on a more long term basis.

Wlazelek and Hartman (2007) suggest that counselors working with college students in academic jeopardy should be very purposeful in discussing a student's motivations to be in college during the early stages of the counseling relationship. The student's motivations in this realm can help to shape an understanding of the student's current academic concerns as well as the best interventions moving forward. In addition to exploring the motivations that drive a student on their academic journey, the authors additionally encourage counselors to address both academic strengths and areas of concern with students in order to help students to emphasize their strengths.

In many college counseling environments, it is likely key for counselors to make referrals to academic support staff or staff in other support offices to help students

address the academic components of their concerns. If counseling center staff time and resources are limited, they may need to focus on their clients' psychological concerns and connect them with other offices that are designed to assist students in developing the skills and techniques needed to do their best academically.

**Academic support staff and other student support staff.** Academic support staff and other staff may play integral roles in helping students reduce academic stress and build their academic self-efficacy beliefs. College learning centers, tutoring centers, and other offices aimed toward supporting students academically routinely work with many students in need of assistance in these areas. By discussing students' past and current academic habits and strategies, these staff members can help students to develop enhanced skills to improve their academic performance and self-efficacy beliefs. The academic skills focused on might include study strategies, critical reading strategies, note taking strategies, and test taking strategies among others. Staff members in these positions should be prepared to help students identify a number of different techniques and to find the strategies that work best for them. These topics may be covered in one on one meetings with students or in structured group formats. A study skills course could be an important resource for students to not only learn about academic skills and strategies but also to build their academic self-efficacy beliefs, as found by Wernersbach et al. (2014). Individual workshops or multi-session seminars offered for academic credit like the one outlined by Coleman and Freedman (1996) could also be potential programmatic strategies to assist students struggling academically. Such programs could additionally employ a motivational/empowerment model as described by Kamphoff et al. (2007) to

help students stay motivated on their personal academic journeys and work to develop personalized goals, plans and self-management strategies.

Staff in student disability services offices could also play a key role in assisting students experiencing concerns with academic stress or academic self-efficacy. Students with learning disabilities, psychological health diagnoses, or other types of concerns may work with staff in disability services offices to create plans for and receive appropriate learning accommodations needed to do their best in the college environment. It is possible that students in these populations might be even more prone to academic stress or academic self-efficacy concerns, and staff members in these offices could discuss such topics with the students they work with and help to connect those with concerns in these areas with campus counseling centers and academic support offices. Staff in any student support office who are assisting students should also routinely talk with them about academic stress and mental health. Many students may experience concerns outside the academic realm and academic support staff should make referrals to the campus counseling center for students who want to, or who should, seek assistance from a mental health professional.

**Faculty.** Faculty should be aware of the support resources available for students at their institutions in order to connect those they teach and advise with appropriate assistance. Faculty members may detect early signs that students are struggling academically, either through a student's performance in their course or through a student sharing concerns with them. Faculty members could be trained on the student support resources available and how to refer students to them at faculty orientation programs

when they are hired and on an ongoing basis in settings such as divisional or departmental meetings. Staff members from counseling centers and academic support centers could be invited to attend such meetings as well to foster partnerships with faculty. Kadar (2001) suggested a model in which counseling center staff members would each serve as a liaison to a specific academic department at an institution. Faculty and staff in those departments would be able to refer students to that specific counseling staff member, who could work to become familiar with the needs and concerns that students within that department may commonly face. Coll and Stewart (2002) detailed a partnership between a faculty coordinator of an Introduction to Education course, faculty members from the Counselor Education department and the counseling center on the university's campus. Counselor Education faculty visited each of the multiple sections of the education course to discuss counseling with the students and help them to sign up for counseling sessions at the counseling center if they were interested. The faculty coordinator of the course also reached out to students who were not performing well academically in the course and encouraged them to seek counseling. These strategies could help faculty and advising staff to connect students struggling academically with appropriate assistance.

**Counselor educators.** Counselor educators could additionally play a key role in assisting students struggling with academic stress or academic self-efficacy concerns by preparing the future or training counselors they teach and supervise to effectively assist these students. Counselor education faculty could cover techniques to reduce academic stress and enhance academic self-efficacy in their courses for students who plan to work

in school or college settings. These techniques could be applicable to future counselors planning to work in other settings as well, as some clients seeking services in the community setting might also be students or might experience stress or self-efficacy issues similar to academic ones in their vocational roles or other roles. Clinical supervisors overseeing the work of counselor trainees in school or college settings could be sure to discuss academic stress and academic self-efficacy with their supervisees and help them to integrate an assessment of these factors into their work with students. Academic stress and academic self-efficacy could be included as important considerations when discussing developmental concerns in clients who are students, whether it be in classroom conversations or in clinical supervision meetings.

### **Limitations**

Though this study resulted in some significant findings, it also had certain limitations due to its design and scope. The length of the survey appeared to have been a limitation. The combined length of the three instruments that comprised the survey seems to have made it longer than some participants were willing to complete, as a number of recipients who opened the survey did not finish it.

The relatively low reliability of the MHI was another limitation in this study. The MHI did not prove to be a very reliable instrument to use with college students, at least in this sample. The instrument was created for a clinical population and not college students, so it is possible another instrument would more reliably assess psychological health in college students. An item analysis revealed that certain questions on the MHI seemed to reduce the reliability of the scale considerably. The questions removed in the



item analysis were, respectively, item #8 (“During the past month, how much of the time have you generally enjoyed the things you do?”), item #22 (“How much of the time, during the past month, have you felt emotionally stable?”), item #34 (“During the past month, did you ever think about taking your own life?”), item #18 (“During the past month, how often did your hands shake when you tried to do something?”) and item #26 (“During the past month, how often did you feel that others would be better off if you were dead?”). The removal of these five questions raised the Cronbach’s Alpha of the scale to .701. A number of possible factors could have contributed to the problematic reliability of these questions in the college student population surveyed. Item #34 and item #26 concern suicidal ideation, and it is possible that some students were hesitant to consider that type of serious subject matter. Students could have also had different interpretations of the wording or terms used in some of these questions, such as the term “emotionally stable” in item #22. Item #18 inquires about the frequency that one’s hands shook while attempting to complete a task, and this might be an experience to which few of the participants could relate.

The exploratory factor analysis conducted on the MHI also yielded interesting results. The initial factor analysis suggested that the scale contained six factors, which was expected given the six subscales within the instrument. The removal of item #8, which was cross loaded across four factors, reduced the total number of factors to five however. This question was clearly problematic for this instrument, at least in the given sample of college students.

An additional limitation of this study was the fact that the participants who responded to the survey were not very diverse. The vast majority of participants identified as Caucasian/White. More female students than male students responded to the survey. A large portion of the participants were older than traditional college student age. It is possible that some groups of students, such as female students or those older than the traditional 18 to 22 years of age, may have been more likely to respond to the survey than others due to factors such as being more sympathetic to assisting with research or potentially finding the drawing prize of Amazon.com gift cards more appealing.

The population that the sample for this study was drawn from was the student body of just one institution. Various factors, such as the demographic makeup of the students who attend this university or the academic culture of the institution, could influence the variables that were examined in this study. These factors may lead to the results not being generalizable to students at other institutions. The time in the academic term when the students received and completed the survey could additionally play a role in their responses.

### **Recommendations for Future Research**

A shorter survey would be suggested for future research on this topic. Such a survey could potentially be attained either by selecting different instruments to assess these variables or perhaps by creating a new instrument. Utilizing a different instrument to assess psychological health would certainly be advisable given the low reliability of the MHI in this study.

Future research could look more deeply into these topics in different populations of undergraduate college students, or perhaps graduate students. Students in different academic disciplines or with different demographic characteristics could be assessed. Students with learning disabilities or other types of disabilities might also be a population future research on this topic could focus on. The survey could also be administered at different critical points during an academic term (such as the beginning of the term, midterm, or during final exams) to compare the different impacts, if any, academic stress and academic self-efficacy might have at these stages of the courses a student was taking in a given term.

Additional research on this topic could also survey multiple institutions or potentially different types of institutions. Differences between students in institutional settings of different sizes, public or private institutions, religiously based institutions, or in institutional settings mainly comprised of specific student populations such as Historically Black Colleges or Universities (HBCUs) could be explored.

### **Conclusion**

This study summarized previous literature on the topics of academic self-efficacy, academic stress and psychological health in college students. In the current study, the researcher investigated whether gender, academic self-efficacy and academic stress were predictors of psychological health in a sample of undergraduate college students. A hierarchical regression was conducted to investigate these research questions. It was found that gender was not a significant predictor of psychological health, but academic self-efficacy and academic stress were both significant predictors of psychological health

in this sample. The possible implications that the results of this study might have for counselors, academic support staff, and others who work with college students were explored. The limitations of this study and suggestions for future research on this topic were also discussed.

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## Appendix A: Institutional Review Board Approval



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The following research study has been approved by the Institutional Review Board at Ohio University for the period listed below. This review was conducted through an expedited review procedure as defined in the federal regulations as Category(ies):

7

**Project Title:** Academic Stress and Academic Self-Efficacy as Predictors of Psychological Health in College Students

**Primary Investigator:** Golden G. Fanning

**Co-Investigator(s):**

**Faculty Advisor:** Yegan Pillay  
(if applicable)

**Department:** Counseling & Higher Education

*Rebecca Cale*

Rebecca Cale, AAB, CIP  
Office of Research Compliance

*11/29/12*

**Approval Date**

*11/28/13*

**Expiration Date**

This approval is valid until expiration date listed above. If you wish to continue beyond expiration date, you must submit a periodic review application and obtain approval prior to continuation.

Adverse events must be reported to the IRB promptly, within 5 working days of the occurrence.

The approval remains in effect provided the study is conducted exactly as described in your application for review. Any additions or modifications to the project must be approved by the IRB (as an amendment) prior to implementation.

S

## Appendix B: Demographic Questionnaire

Please respond to the following questions about yourself:

What is your gender?

- Male
- Female
- Other

What is your class year?

- First Year Student (Freshman)
- Second Year Student (Sophomore)
- Third Year Student (Junior)
- Fourth Year Student (Senior)
- Fifth Year Student
- Sixth Year Student or Above

What is your age?

- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25 or older

What is your race?

- African American/Black
- American Indian or Alaska Native
- Asian
- Caucasian/White
- Hispanic/Latino
- Native Hawaiian or Other Pacific Islander
- Other

How many credit hours are you enrolled in this semester?

- 0.5-5.5 Credit Hours
- 6-11.5 Credit Hours
- 12 or More Credit Hours

What is your major? (open response text box)



Are you a first generation college student (students are considered first generation if neither parent graduated from a four year college or university)?

- Yes
- No

Are you an international student?

- Yes
- No

How are you funding your college education?

- I am paying for college on my own (with a job, financial aid, partial scholarships, etc.)
- My parents/guardians are funding my education
- I am paying for some of my expenses and my parents/guardians are covering others
- I have a full scholarship

What is your satisfaction with your current living situation?

- Very Satisfied
- Somewhat Satisfied
- Neutral
- Somewhat Dissatisfied
- Very Dissatisfied

Are you currently on academic probation?

- Yes
- No

### Appendix C: CASES Instrument Permission

Golden Fanning  
Doctoral Student, Counselor Education and Supervision  
Ohio University  
Athens, OH

12 May 2012

Dear Golden,

Thank you for your inquiry about the College Academic Self-Efficacy Scale (CASES). You are welcome to use CASES. I've attached a copy of the scale. Here are a few summary points about the scale.

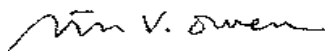
Items are scored as A ("quite a lot") = 5...E ("very little") = 1. On the other hand, because we read from right to left, data entry is faster letting A = 1, and E = 5. If you enter data with A = 1, then let the computer recode the values so that A becomes 5, B becomes 4, etc. In calculating an overall CASES score, we prefer calculating a mean rather than a sum.

You may wish to modify questionnaire instructions to best fit your application. For example, if you need informed consent, you might say something like "Filling out this questionnaire is completely voluntary and confidential. There are no penalties for not participating, and you may quit at any time."

The next page shows the CASES items. Following that is a conversation about scoring CASES, plus some normative data.

Best wishes in your research.

Sincerely,



Steven V. Owen, Professor (retired)  
Department of Epidemiology & Biostatistics  
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**Appendix D: Pattern Matrix for Oblique Exploratory Factor Analysis of the Mental Health Inventory**

	Factor					
	1	2	3	4	5	6
MHIQ19	.726					
MHIQ9	.684					
MHIQ27	.660					.228
MHIQ20	.570					
MHIQ36	.487					.390
MHIQ1	-.471	.259				-.293
MHIQ2	.452	-.325				
MHIQ24	.427					.212
MHIQ30	.369				.287	
MHIQ33	.354		-.247		.316	
MHIQ18	-.295	.207				
MHIQ10		.691				
MHIQ23		.687				
MHIQ4		.410			-.289	-.241
MHIQ16	.319	-.407				
MHIQ12		.337				-.286
MHIQ14	-.256	.303	.224			
MHIQ6			.835			
MHIQ17			.758			
MHIQ22			.689			
MHIQ7			.477			-.266
MHIQ13	.340		-.426		.344	
MHIQ5		.211	.397			-.293
MHIQ37			.369			
MHIQ29	.257		-.354	-.318		
MHIQ46	.314		-.337			
MHIQ28				-.922	-.225	
MHIQ21				-.695		
MHIQ15				-.311	.231	
MHIQ8	-.234	.235	.233	.267		
MHIQ11					.793	
MHIQ3					.687	
MHIQ25	.206				.584	
MHIQ35			-.227		.545	
MHIQ32	.234				.419	.218
MHIQ34						-.654
MHIQ31						-.600
MHIQ26						-.538

Extraction Method: Principal Axis Factoring. Rotation Method: Oblimin with Kaiser Normalization. Rotation Converged in 16 iterations.



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